

IQLR

International QL Report

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DI-REN's NEW AFFORDABLE



KEYBOARD INTERFACE

IQLR.....

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Issue 1	10 April
Issue 2	10 June
Issue 3	10 August
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Issue 5	10 December
Issue 6	10 February

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QL 2000

London, ENGLAND - Ken Brickwood

section one: IF IT'S THAT SIMPLE, WHY DON'T YOU BUILD IT YOURSELF !

Before I explain my ideas on a possible successor to the QL, I will attempt to clarify a few points. I am NOT an expert. I definitely lack the skills, and I probably don't have the talent, to devise any kind of QL replacement. My technical knowledge is limited to odd bits of information gathered from the following sources :

QL SERVICE MANUAL

MAPLIN'S CATALOGUE

(electrical & electronic components)

QUANTA + OTHER QL PUBLICATIONS

ST FORMAT + OTHER COMPUTER MAGS

I AM aware of the difficulties. I know enough about the somewhat chequered history of the SINCLAIR computers (and their derivatives) to realise that the process of creating hardware, software, etc. has an almost unlimited potential for throwing up all sorts of weird, unexpected, and downright intractable, problems.

I am not in the business of peddling wish lists, pipedreams, or phoney promises. The one thing I would like to see is a secure and comprehensive range of upgrsde options that will ensure the continued survival of QDOS and SMSQ/E. These notes are NOT an attempt to tell the hardware designers :

"You must do this!" or "Don't do that!"

They're simply a layman's suggestions as to what might represent the next logical steps in the development of the QL.

section two: DO WE NEED A QL REPLACEMENT ?

There are a number of reasons why such a product is necessary.

1 > The EMC Directive. The European Union has enacted legislation that will, amongst other things, prohibit EU companies from supplying EU citizens with the following types of equipment

Systems which exceed the limits specified by the Electromagnetic Interference Regulations.

I/O cards and other modules that are designed specifically for non-conforming hardware (even if they meet the required standards).

This law has VERY serious implications for the QL community. MIRACLE SYSTEMS, TF SERVICES, and other traders, cannot legally sell their hardware products to EU citizens after 31st December 1995.

2 > AMSTRAD (forgive me for swearing) own the marketing and manufacturing rights. I don't think they would be particularly happy if someone produced and supplied a new system which contained the QL motherboard, ZX8302, or any other SINCLAIR component. The Beast of Brentwood & His Merrie Men were not impressed when CST gave the QL a radical makeover and called it the THOR 8.

3 > The QL support chips are operating at (or pretty close to) the limits of their capabilities, and can barely cope with the demands placed on them.

4 > Limited expansion facilities. It would be very difficult (if not impossible) to add a faster processor; more memory; etc, to a QL fitted with the various upgrades that are either available now or in the near future. Two other factors restrict the machine's expansion capabilities. The motherboard doesn't have a multi-slot backplane, and the thing generates so much RF interference it's a miracle that any add-ons and peripherals can be connected to the system.

5 > The QL isn't exactly future proof. Although most of the machines currently in use are going to provide years of (fairly) reliable service, they won't last forever and there's a finite supply of spares & replacements that will

QL 2000 - (cont'd)

eventually run out. Moreover, an unholy alliance of wonderful widgets, state-of-the-art system software, and a lousy integration module based on SPECTRUM technology is unlikely to attract many new users.

section three: CONCEPTS

The QX1 and QX2 specifications represent an approach to hardware development that is somewhat different to the methods used by the computer manufacturers.* For the sake of convenience I have given this system design philosophy a name - BLACK BOX ARCHITECTURE (or BBA for short) BBA is based on the following ideas.

1>. UNIVERSAL HARDWARE. Intelligent Terminals, Workstations, and everthing in between, could be constructed from more or less the same components. In other words, the entry level machine and the top-of-the-range model would be totally identical apart from a few differences, e.g.:-

BOTTOM

2 or 4 MB RAM
68020 CPU
256k VIDEO RAM

TOP

At least 16MB RAM
68040 or POWERPC
At least 1 MB VIDEO RAM

2>. THE ENVIRONMENTALLY FRIENDLY, PORTABLE, FUTURE-PROOF COMPUTER. As far as I know, there is no such thing as a truly green system. However, we can minimise our impact on the environment, and achieve the other objectives, by adopting a few fairly simple measures.

i. Every IC, and maybe 1 or 2 other components, should be mounted in a socket. If we also used semi-custom chips (e.g. GALs) to handle the internal I/O and logic functions, then everything except the PCB(s) could be reused.

ii. Provide equipment that enables users to run their computer from batteries and connect an LCD screen. Incorporate a power management system that puts the computer into standby mode if it doesn't receive any input after a user-definable timeout period.

iii. If the system was designed in such a way that its performace was governed by three factors, i.e.:-

PROCESSOR SPEED - MEMORY SIZE - HOW MANY EXPANSION SLOTS

then we could extend the lifespan to at least ten years.

3>. REAL PLUG AND PLAY - BEWARE OF IMITATIONS ! Adding more memory, faster processors, I/O cards, etc should be a simple procedure that doesn't involve anything more complicated than:-

Plugging the hardware into the appropriate socket, Installing some software, And (maybe) removing an existing component.

PATHETIC COMPUTERS - Brute force and crass stupidity

AMIGA & MAC	- Weird and incomprehensible
ST & QL	- Son of 8-bit

4>. UNIBUS A mechanism that supports multiple bus masters, and provides a standard set of protocols for interfacing and addressing:-

PROCESSORS
MEMORY - all kinds
SIGNAL GENERATORS - e.g. sound chips and video controllers.

5>. THE FIVE ELEMENTS. BBA divides computer hardware into five categories

QL 2000 - (cont'd)

BUSCARD. A PCB that provides the address and data lines, plus any physical connections that may be required.

PXM. The Program eXecution Module consists of two sub-modules SYSTEM ROM(s) that contain QDOS/SMS + TK2 etc, or a BIOS PRIMARY PROCESSING UNIT (PPU) - a daughterboard fitted with a 68xxx processor.

WORKSPACE is simply the RAM that's used to store programs, data, etc

BLACK BOX. A Black Box is an autonomous or semi-autonomous subsystem that automatically performs a closely related set of functions. The main CPU doesn't need to know anything about it's activities - hence the name. Black boxes have two other significant features. BBA doesn't care if the hardware is plugged directly into the motherboard, or mounted on a card that occupies an expansion slot. They could be Intelligent Peripheral Controllers, Emulators, or anything else you want them to be.

TRANSWARP MODULES. Semi-custom devices that monitor the buses, and supervise the transfer of data to and from :

PXM
WORKSPACE
BLACK BOXES
DEMO - DISPLAYING TEXT AND GRAPHICS ON THE SCREEN

The following example will (hopefully) give you an idea of how BBA might work.

The main CPU sends a control signal that tells TRANSWARP 1 " I am sending some video data "

TRANSWARP 1 writes the data to the VIDEO RAM. The VIDEO CONTROLLER reads the data and converts it into signals that can be understood by a monitor.

section four: QXone - A REPLACEMENT MOTHERBOARD FOR THE QL. Draft Specification 30-09-95.

ACKNOWLEDGEMENTS

Leon Heller - who initially floated the idea of building a QL replacement round the PHILIPS PCB 68070.
(Some Thoughts On a QL Replacement - QUANTA July 1990)

Zeljko Nastasic - whose WARPIO idea inspired the I/O SUBSYSTEM specs. (The Shape of Things to Come -- IQLR Jan/Feb 1995)

Maplin Catalogue - Philips SAA1099 specification (1993/1994 Edition -- page 545)

GUIDELINES: Provide QL users with a system upgrade that doesn't require any additional hardware apart from a GOLDCARD/SUPER GOLD; QL ROMS; SUPERHERMES or HERMES/8049 + KEYBOARD i/f; KEYBOARD; a desktop, tower, or laptop enclosure; and a PSU.

Installing the QXone should be a DIY operation that is well within the capabilities of anyone who can insert & remove ICs, and wield a screwdriver.

I/O functions that require the use of several generic components, should be handled by custom or semi-custom chips. Off-the-shelf components could be used to support the remaining functions.

COMPONENTS & I/O FUNCTIONS:

FIRMWARE : JS ROMS or MINERVA

QL 2000 - (cont'd)

PROGAMMABLE LOGIC DEVICES : TRANSWARP 1

MASTER CLOCK GENERATOR
BUS CONTROLLER

SYSTEM LOGIC
VIDEO HARDWARE SUPERVISOR

TRANSWARP 2

INTERRUPT CONTROLLER
NETWORK INTERFACE DRIVER

SERIAL I/O SUPERVISOR
ST COMPATIBLE MOUSE i/f

I/O SUB-SYSTEMS : BLACK BOX 1

MASTERPIECE GRAPHICS CONTROLLER ?
256k VIDEO RAM

BLACK BOX 2

- 1 PHILIPS PCB68070, MOTOROLA MC68340, or whatever 68020 variant is best suited to the job.
128/256k DUAL-PORT RAM
- 2 SOCKET FOR 8049/HERMES/SUPERHERMES
- 3 PHILIPS SAA 1099
- 1 RS232 SERIAL I/F NETWORK RECEIVE + TRANSMIT
FIFO EMULATION 68xxx-Compatible Slave Processor
2-CHANNEL DMA PORT MEMORY MANAGEMENT UNIT
- 2 KEYBOARD - JOYSTICK - MOUSE
- 3 STEREO SOUND GENERATOR

INTERFACES

Q-SLOT a QL-Compatible expansion slot that will accommodate - QPLANE; SUPER GOLDCARD; QUBIDE; etc.

QART	QL-Compatible ROM port
CTL	ST-Compatible JOYSTICK + MOUSE port
SER1 + SER2	RS232 ports - preferably with DTR; DSR; + DCD lines
MONITOR	QL + PC compatible monitor port
QX-NET	A high performance network i/f compatible with QL NET and QUBBESOFT's FASTNET
AUDIO	Headphone/Active speaker jack, and possibly hi-fi audio outputs to facilitate connection to stereo systems

section five: QX2 - A STAND-ALONE QDOS/SMS COMPUTER

PREAMBLE - QX2 uses the same hardware as QXone, but there are a number of significant differences. For example, everything is mounted on a single board.

(ADDITIONAL COMPONENTS) MANDATORY :

68xxx CPU
At least 2 or 4MB RAM
8473 FLOPPY DISK CONTROLLER

QL 2000 - (cont'd)

PARALLEL (Centronics) i/f
IDE CONTROLLER
SOCKETS FOR ADDITIONAL VIDEO RAM

BACKPLANE Providing sufficient expansion slots to accommodate : At least 12MB RAM
At least 3 QCARDS - Black Box modules which extend the capabilities of the system in various ways. e.g.

I/O SUBSYSTEMS

HARDWARE BASED PC, ST, etc EMULATORS

OPTIONAL :

CPU and RAM to facilitate background disk operations.

ADD-ONS :

BUS EXTENDERS providing additional expansion slots
BUS CONVERTERS to facilitate the connection of various backplanes, namely:-
ISA/LOCALBUS/PCI , PCMCIA , VME

SUPPORT CHIPS - ADDITIONAL INFORMATION: PHILIPS PCB 68070 - 68000-Compatible Processor running at 10Mhz; RS-232C Serial Interface; I2C Serial Bus I/f; On-chip Clock; MMU; Two-Channel DMA Controller; CMOS Technology; 4 Decoded Interrupt Inputs; 2 Programmable Interrupt Inputs; Decoded Interrupt acknowledge; 16-Bit Counter/Timer.

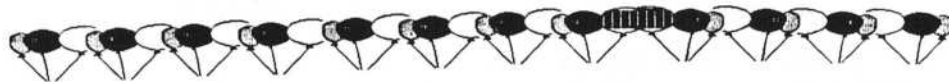
128/256k DUAL-PORT RAM - This memory chip could be used by the 68070 etc to provide buffering for the NETWORK, and possibly, other interfaces.

PHILIPS SAA 1099 - Six Independent Frequency Generators each having 8 octaves + 256 tones per octave; 2 Noise Generators; 6 Noise/Frequency Mixers; 12 Amplitude Controllers; 2 Envelope Controllers; 2 Six-Channel Mixers/Sink Analogue Output Stages.

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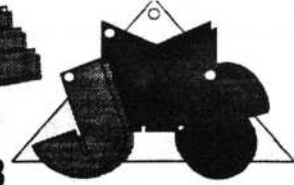
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SMSQ/E updates are free, just send master disk(s) & return postage or use the free mailbox update service! Albin Hessler gave his kind permission to bundle SER Mouse with every SMSQ/E for the GoldCard and SuperGoldCard. This applies to free updates too. The manual is now Revision 3 - including the SER Mouse documentation and all the changes so far. A new manual costs **DM 16,-**.

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Formed in 1984, QUANTA (The QL Users AND Tinkerers Association) has endeavoured to promote the Sinclair QL Computer and more recently its many offsprings but essentially the "QDOS" operating system as devised by Tony Tebby.

There is a large and growing, sophisticated, supply of software which seeks to take advantage of the many benefits offered by QDOS, SMSQ etc., such as Multitasking, a recent arrival on the PC but a part of QDOS for over 10 years, the Pointer Environment and the many advantages of 32 bit computing.

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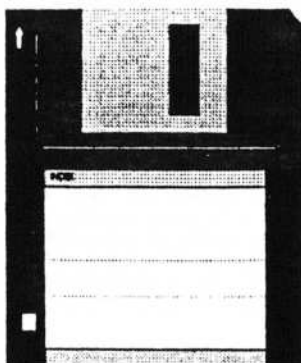
QUANTA maintains a library of 80 plus disks, mostly full, which is free to members and still growing. We also run "Workshops" so that members can meet one another and a great time is had by all. Perhaps the greatest achievement QUANTA can boast about is the ease with which you can make friends and obtain help.

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QPAC2 for Starters

Yate, Bristol, UK - Stuart Honeyball

If you are one of those people who have purchased QPAC2 but have never actually used it then this is for you. QPAC2, Tony Tebby's QL Pointer Accessories, is a marvellous piece of software giving the QL a powerful front end but there are 2 obstacles in the way of getting started with it and they are the impenetrable manual and the lack of an introductory "Boot" program on the master disk. This article will hopefully show you how to construct a suitable "Boot" program which can be experimented with to customise it to your own requirements. In the interests of brevity in depth explanation will be avoided.

You need to have Toolkit II so if you're using a TRUMP CARD, GOLD CARD, SUPER GOLD CARD or QXL then you've got it. SMSQ/E also contains Toolkit II. All POINTER ENVIRONMENT programs, of which QPAC2 is one, need to have the files "Ptr_Gen" (Pointer Generator), "WMan" (Window Manager), and "Hot_RExt" (Hotkey Resident Extensions) linked in. All these items are best viewed as being extensions to the operating system.

Firstly, make a run time disk by putting the master QPAC2 disk in "Flp2_" and a FORMATTed disk in "Flp1_" and entering the following:

```
TK2_EXT
WCOPY "Flp2_" to "Flp1_"
```

It will ask you, for each file, whether you wish to copy that file. Answer 'y' (yes) for the 4 files "Ptr_Gen", "WMan", "Hot_RExt" and "QPAC2" and 'n' (no) for the rest. It should be noted that file names are case independent and so "ptr_gen" is the same as "Ptr_Gen", etc.. When this is done the QPAC2 master disk can be stored away. Check that the files have been copied by doing a directory of the disk: e.g. DIR "Flp1_"

We can now start constructing the "Boot" program. Assuming the drive you normally use for loading up programs is "Flp1_" then the following will link in the operating system extensions:

```
100 Prg$="Flp1_"
110 TK2_EXT
120 LRESPR Prg$&"Ptr_Gen"
130 LRESPR Prg$&"WMan"
140 LRESPR Prg$&"Hot_RExt"
150 HOT_GO
160 LRESPR Prg$&"QPAC2"
```

SMSQ/E users should leave out lines 110 to 140. Type in the above program and SAVE it by entering: SAVE "Flp1_Boot" and then RUN it.

The HOT_GO command in line 150 starts the "HOTKEY" task going. The reason why the LRESPR in line 140 does not do this for you is to take into account users without Toolkit II.

What QPAC2 gives you are some memory based objects which Tony Tebby has imaginatively named 'Things' and the ability to generate 'Buttons'. The Things supplied in QPAC2 are of the executable variety and are a bit like executable programs but instead of being loaded from disk and run they reside in memory and are executed there. Buttons take the form of small windows on the screen which have some action associated with them e.g. selecting a task, starting a program, etc..

A Thing can activated using the EXEP command. Try: EXEP "Exec"

A menu will appear on the screen listing the executable things available. There is also a pointer which can be moved around using the arrow keys. Move the pointer around until the "Pick" option is selected. There are 2 ways of activating this: 1) 'Hit' it by tapping the space bar or, 2) 'Do' it by tapping the enter key. The QIMI, Albin Hessler or Super Hermes mouse can also drive the pointer; 'hit' with the left hand button and 'do' with the right hand button.

QPAC2 for Starters - (cont'd)

Remember, if you wish to go to heaven then: To ENTER, DO RIGHT. Try hitting it. The "Pick" menu appears listing all the jobs currently running quickly followed by the "Exec" job putting itself back on top. Move the pointer around until it is over the "Pick" window (not the "Pick" option of the "Exec" menu). It will turn into a padlock meaning that the window is not ready for input. Hit on this and the "Pick" window will be brought to the top. Put the pointer over "SuperBASIC" and do it. The "Pick" job quits and "SuperBASIC" is brought to the top. Familiarity with the Things is best achieved by experimentation with perhaps the odd glance at the manual.

The HOTKEY System 2 replaces the Toolkit II Altkey system. It allows a single keystroke (i.e. holding the ALT key down and tapping another key) to do something fairly powerful. A useful function is HOT_PICK. This allows a Hotkey to pick a job rather like you can do using the "Pick" Thing (or even repeated CTRL-c presses). To set up a Hotkey you need to give the function the key name and the job name. Note that HOT_PICK is a function; the value it returns is the error number which will hopefully be 0 indicating no error. A special procedure has already been added to the operating system to print out the error message if there is one and is called ERT. Add this line to the program:

```
170 ERT HOT_PICK("b","")
```

This will let the key press Alt-b pick "SuperBASIC". "SuperBASIC" is a special case and has the name "" (the null string). You could assign a Button to this Hotkey by:

```
BT_HOTKEY "b"
```

which would provide a suitable Button but it would be more useful to have "Alt-b:SuperBASIC" written in it as a useful reminder of the corresponding Hotkey. To do this, add this line:

```
180 BT_HOTKEY "b","Alt-b:SuperBASIC"
```

Things are best selected using HOT_WAKE and their corresponding Buttons created by BT_WAKE. There are several Things to set up so a procedure is the best way so add the following lines:

```
190 DEFine PROCEDURE SetUpButton(HotKey$,Thing$)
200   ERT HOT_WAKE(HotKey$,Thing$)
210   BT_WAKE Thing$,"Alt-"&HotKey$&":"&Thing$
220 END DEFine SetUpButton
230 SetUpButton "c","Channels"
240 SetUpButton "e","Exec"
250 SetUpButton "f","Files"
260 SetUpButton "h","Hotjobs"
270 SetUpButton "k","Hotkeys"
280 SetUpButton "j","Jobs"
290 SetUpButton "p","Pick"
300 SetUpButton "r","Rjob"
310 SetUpButton "s","Sysdef"
320 SetUpButton "t","Things"
330 SetUpButton "w","Wake"
```

There is another useful Thing called "Button_Pick" which brings all the Buttons to the top. It is customary to assign the Hotkey "." to this as follows:

```
340 ERT HOT_THING(".", "Button_Pick")
```

This allows you to press Alt-. at any time to get all the Buttons on top. There is another useful procedure HOT_DO which effectively presses a Hotkey for you. Usually, when a job is started the cursor goes to that job and the initiating job has its windows made inaccessible e.g. attempts to PRINT will just stop the program. It is sometimes necessary to add the command:

QPAC2 for Starters - (cont'd)

```
HOT_DO "b"
```

to get control back to SuperBASIC. Add the line:

```
350 HOT_DO "."
```

so that you are presented with all the Buttons after the boot up.

That's it! Make sure that all the numbered lines above are typed in correctly and SAVE it as "Flp1_Boot". Having SAVED it, reset the computer and let it boot up. You should be presented with a lot of Buttons. Move the pointer over any one you like and Do it. Alternatively, hold down the ALT key and tap the appropriate key as indicated in the Button. To get the Buttons back type Alt-. (i.e. hold down the ALT key and tap "."). To achieve Alt-. on a mouse you tap both left and right buttons simultaneously.

As a postscript here are the lines necessary to add "Xchange" to the system. It is assumed that "Xchange" is already on the floppy disk in question:

```
360 EXEP Prg$&"Xchange","P",300
370 ERT HOT_PICK("x","Xchange")
380 BT_HOTKEY "x","Alt-x:Xchange"
390 HOT_DO "."
```

In line 360 the "P" tells the operating system that it's an awkward Psion program and the 300 asks it to restrict its memory requirement to 300Kbytes. Note that line 370 assumes that "Xchange" gives its name as "Xchange" to the operating system. This is true for the version 3.90 (modified by Erling Jacobsen). Other programs may not be so accommodating. Hint: to find out the name of a job, get it executing and then use the "Jobs" Thing.

For reference, the versions of the programs used to verify this article were:

Ptr_Gen	V1.64
WMan	V1.48
Hot_RExt	V2.27
QPAC2	V1.35

MUENCHEN MEETING

Yate, Bristol, UK - Stuart Honeyball

23 SEPTEMBER 1995: This was yet another well attended QL meeting in Germany which yielded some surprises, not least of which was the hotel in which it was held. The hotel management had evidently learnt their trade from Fawlty Towers. Tony Firshman and I arrived there on the Friday morning and it took a while trying to find someone. Eventually we found the manager's grandmother who seemed to want to refuse to have anything to do with us. After some meaningless discussion she suddenly snatched the bit of paper I was holding right out of my hand but, alas, this did not signify progress. Fortunately her grandson turned up and we were able to sign in. It was suggested to her that she should show us to our rooms. The next thing we knew she was running up the stairs yelling at us to hurry up and follow her. Before I had time to put on my rucksack, complete with its 25kg contents, she was out of sight. I threw the rucksack on and chased after her catching up just in time. Phew!

At the meeting Zeljko Nastasic was showing a monochrome LCD screen driven by the QL. This is his first tangible step towards a truly portable QL and was quite impressive. There was also a Dutch representation with the Primus which is a QL compatible built into a 19 inch rack. Tony Firshman was taking orders for the SUPER

Muenchen Meeting - (cont'd)

HERMES and was demonstrating the multitasking nature of the QL. He had a temperature sensor connected to the I2C Analogue to Digital Converter he sells which is connected to the Minerva MkII. When the meeting opened it was 20.5C but a few hours later it was 24C which proved that the meeting hotted up. Jochen Merz was selling his comprehensive range of software and was demonstrating some of it on a high quality 30kg (17 inch) monitor. Quanta was ably represented by John Southern.

Pride of place though must go to Marcel Kilgus. He is a teenager who has written a 68000 emulator to run on a 486. He had also "borrowed" Minerva and Toolkit II from his QL (tut tut) and was able to demonstrate it running various QL programs which it did handsomely. The emulator occupies 40K and on a 33MHz 486 runs slightly faster than an unexpanded QL. This might not sound much at present, but bear in mind that by the year 2000 the average PC will be running a 300MHz Pentium Pro so this sort of emulator could beat the QXL's 68040. Definitely a promising technology but needs a legal operating system.

QL users came from Croatia, Austria, Switzerland and England as well as Germany and everyone had an enjoyable time. Thanks must go to Friedemann Oertel and Peter Blaha who overcame the challenge of communicating with the hotel management and organised an excellent meeting.

A Comment from the Publisher

This issue like the last one has been delayed due to the lateness of articles and advertisements. This is very strange to us. In the past four and one half years it was never a problem. Please, PLEASE, send in your articles and adverts by the deadlines listed on page 2 of every issue. With your co-operation this will be the last issue with so few pages and hopefully, the issue will arrive at your home in a timely manner.

TF SERVICES

superHermes

Hermes co-processor solved the major problems of the QL co-processor. **superHermes** does this and adds the following, all on a quality circuit board not much larger than the original 8049:

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- Capslock/scroll lock LED connector
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LINEdesign

With LINEdesign, you can create artistic drawings, technical drawings, process bitmaps (even scale and rotate them!), and any kind of vector drawings. You can draw lines, curves, circles, ellipses, pies, squares, rectangles, rectangles with rounded corners, and any combination of these to create the most fabulous drawings ever seen. Because LINEdesign is a vector drawing program, any part of the picture can be moved, scaled, rotated, slanted without any loss of precision or resolution. In LINEdesign, pictures are device independant, meaning that the printout will be the same on any printer (e.g. same size and position). Also LINEdesign is good at handling text. You can easily put titles and full paragraphs on the page. You can choose from a large variety of fonts (you get 130 with the program), and they can be displayed at any size, rotation, etc. If the fonts which are given with the program are not enough for you, there is a special program to convert Adobe Type 1 fonts for use by LINEdesign (pfb2pff). LINEdesign is a drawing program, but it can also be used by people who are not good at drawing. LINEdesign is a great program for making leaflets, posters, and any kind of printed work. To add a graphical touch, you get about 150 clipart pictures, including banners, borders and general purpose drawings. LINEdesign will reproduce everything at the highest possible quality! LINEdesign is delivered with an extensive manual, which includes a full printout of all the fonts and the clipart given with the program.

PROforma

PROforma is a vector graphics library. It is very powerful, and can be used for any application which needs high quality output. PROforma is used by LINEdesign, PFdata and PFlist to produce the output. PROforma supports black and white vector graphics and includes:

- * clipping paths
- * transformation matrixes
- * grayshades, (thick) lines and bezier curves
- * filling using even odd and winding rule
- * vector (outline) fonts, which can be used in any size. Hinting is used to make sure small fonts look good.
- * true WYSIWIG. PROforma can generate output for screen and printer, and the output will be exactly the same on both (with any difference due to difference in resolution).
- * bitmaps. Although PROforma is a vector graphics library, you can include classic bitmaps so you can still use your old graphics.

PROforma (API) package is supplied with a comprehensive manual and examples.

pfb2pff This program allows you to convert Adobe Type 1 pfb fonts for use by PROforma.

DATAdesign

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DATAdesign API

Using the API, programmers can unleash the real power of the DATAdesign engine, getting a relational database with a bonus, you don't even need a key field. The API gives you a unique and powerful record at a time data manipulation extension to the language you already use.

PFdata

Interesting program for all DATAdesign owners, to create hardcopy of your DATAdesign files using PROforma. You can use a large selection of fonts, in any requested size. Also LINEdesign pictures can be included to add logo's, boxes, etc. Several records can be printed on each page,...

PFlist

Easy to use program to create listings on any printer (especially inkjet and laser). Can include a footer with filename and filedate, always allows perforation of your pages. The font and fontsize can be chosen (PFlist uses PROforma). PFlist can create your listings in two columns, and in landscape (or both).

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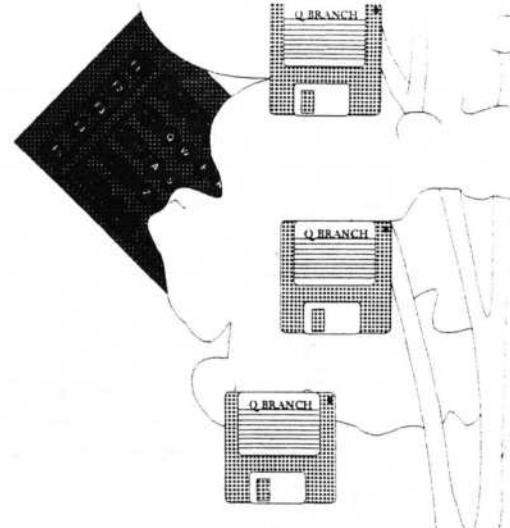
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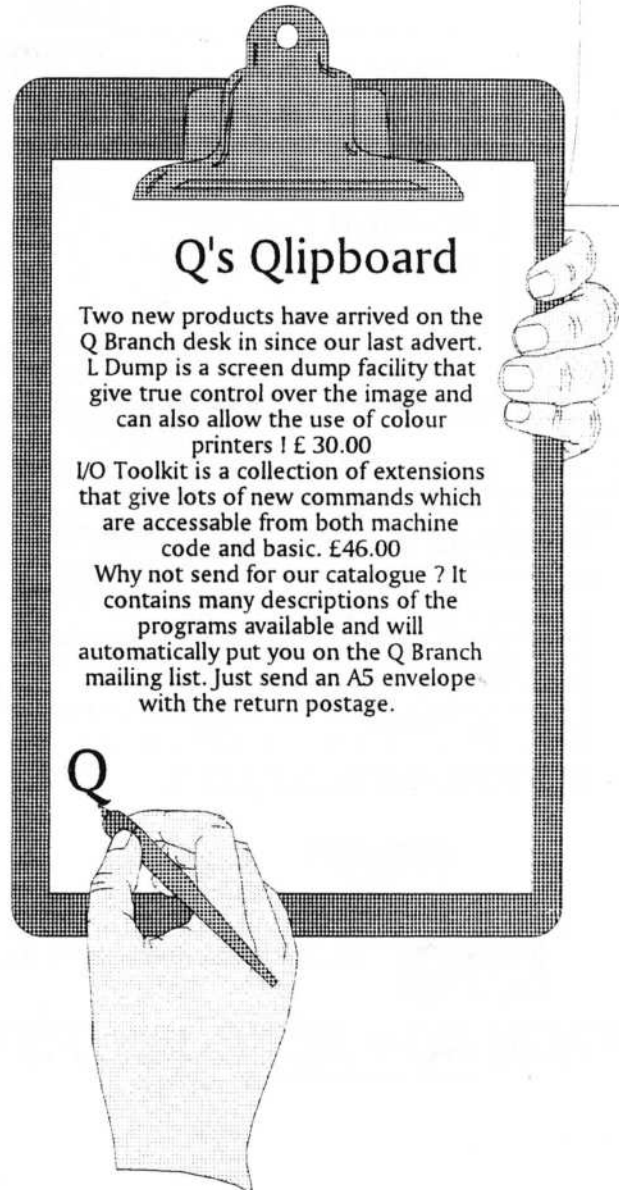
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April 1995

Around the World in 80 Ways

Oak Ridge, Tennessee, USA - Doug LaVerne

Adventures with the Internet, the QL, and QTPI

INTRODUCTION: I've been around the world in 80 ways, all from the comfort of home, on my QL, all via a modem and local telephone calls. The only long distance phone call will be to put this article on QBOX-USA bulletin board system in Michigan (from my home in East Tennessee) for Bob Dyl to pick up.

"Around the World in 80 Ways" is simply a play on the title of the Jules Verne book about Phileas Fogg's adventures, Around the World in 80 Days. Mr. Fogg, though, probably had to apply himself to finding 80 ways to make his circumnavigation.

I have:

- o Chatted real-time, simultaneously with people from Asia, Europe, Canada and the US about commercial software packages;
- o Explored software libraries in Berlin and elsewhere in Europe;
- o Telnetted to the WELL, the famous 'virtual community' headquartered in San Francisco, and sampled the conferences and files available in their guest account;
- o Followed the America's Cup 1995 competition via the net, usually getting race results ahead of or even with reports on the wire services;
- o Spent hours browsing the now-famous World Wide Web using a character-oriented browser one hardly hears about. I've even downloaded job announcements from the International Atomic Energy Agency (IAEA) in Vienna to a 3.5" QDOS disk in my home;
- o I've used or attempted use of the famous Internet tools Archie, Gopher, and Veronica;
- o I've both "lurked" and "posted" on various Internet discussion groups known as Usenet "newsgroups" ("news" groups is a misnomer; "lurking" is staying in the background reading postings but not responding or posting yourself);
- o And I've done that mundane thing--dialed into the office over the phone lines and done work programming, again from my QL, with QTPI's VT100 emulation. That has involved work on the output side of the International Energy Agency's (IEA's) Energy Technology Data Exchange (ETDE) and the International Atomic Energy Agency's (IAEA's) International Nuclear Information System US Input (note: peaceful uses only of nuclear science and technology).

There's even a Roadmap for all this mayhem. Patrick Douglas Crispen, formerly a student at the University of Alabama, created the enormously successful Roadmap '94 on-line workshop to teach the basics of navigating the helter-skelter that is the Internet. Tens of thousands from dozens of countries signed up on-line for the original Roadmap '94. Anyone is free to collect, archive, and (under certain conditions) distribute the text of the 30-plus "maps" or lessons. They cover everything from listservs to levels of connectivity to Archie and Veronica and Gopher to "Netiquette" to advertising on the net.

I have not, however, been successful at collecting the follow-on Roadmap '95 series, which apparently was pulled from the server as soon as it concluded. Roadmap '94 may still be available via EM (Electronic Mail) from the University of Alabama server. Each "map" or lesson takes no more than 15-20 minutes to read, and the homework is minimal.

All the above has been from the comfort of home, all from my QL, all for the cost of local phone calls. So far my only long distance costs have been calling QBOX-USA in the state of Michigan from East Tennessee.

Around the World in 80 Ways - (cont'd)

This has all been possible through obtaining an Internet connection through a local Internet services provider, obtaining a comms program in the form of Jonathan Hudson's QTPI, and obtaining an appropriate cable for my US Robotics 14,400 modem plus an appropriately configured copy of QTPI from a dedicated QL'er. He shall remain nameless for the sake of his own privacy.

This is not a nuts and bolts or how-to article. Very likely for some readers I've already used a number of unfamiliar terms. Bill Cable has written a good nuts and bolts and how-to series for NESQLUG.

I cannot explain everything in a limited space. I'm simply relating adventures on a QL. Some how-to could follow in a later issue. If you are familiar with some of the net-surfing terminology related here, but in a different environment (say at work), realize it's possible on your QL. If you're not too familiar witharchie, Veronica, gopher, EMail, browsers and the Web, realize there's a whole new world out there, and revel in the fact that it's accessible from your QL. What the ritzy net browsers like Mosaic and Netscape can do, you can do most of with a QL, QTPI, a local Internet services provider, and Lynx. (All the fancy graphics in Mosaic just slow down getting the text from the Web).

BEGINNINGS - My Internet and other modem adventures began in August of '94 when I discovered the real Internet. In one short time span I saw cohorts at work debut the US Department of Energy's Home Page on the World Wide Web and I stumbled across the first Internet services provider in my area. I decided I was behind the times and signed up for a dial-up account with US Internet, Inc.

I started out with the famous \$8.95 blue-light special Everex-946 2400 baud modem and QTPI 1.35. Only later did I graduate to a USR 14,400 fax/modem.

My response to the "Internet for Beginners" course at US Internet had been the typical computer jock's "Neat Toys!" reaction. In September '94 I couldn't resist sending my first international EM to come from my QL to Johan Boman in Sweden. I said I was looking forward to seeing a report of the Scandinavian QL meeting in IQLR and I mentioned that my dad's side of the family came from Sweden. I was thrilled to get a response all the way from Sweden. Now long-distance EMail is routine, at home and at work.

For instance, when women from Single Booklovers write, they frequently include an EMail address. I'm currently in touch by EMail with a lawyer from Mutual of Omaha in Omaha, Nebraska, in the middle of the US.

USENET & DISCUSSION GROUPS - My next discovery was on-line discussion groups; in this case, Usenet "news" groups. A newsgroup/discussion group is an electronic free-for-all with participants from all over the world lurking and posting to the group. I have both "lurked" and "posted." One "posting" by any one of the many individuals participating is much like what one Electronic message to QBOX-USA would be, or one EMail on one of your systems at work.

However, that one EM-like posting goes worldwide, to every machine carrying that discussion group. (In fall of '94 there were about 8,000 Usenet discussion groups; there are now about 15,000. US Internet carries them all). There are of course software packages on the Internet provider's system for reading posts and (if you're brave) responding, such as "nn" (NetNews), "rn" (ReadNews), "trn" (Threaded ReadNews), and one of the best, "tin" (Threaded Internet News).

I subscribed briefly to the Usenet group comp.sys.sinclair. However, out of hundreds of postings I perused, only one had to do with the QL. I unsubscribed.

At work I belong to club #5711 of Toastmasters International; I was tickled to learn of the Uesnet group alt.org.toastmasters, devoted to improving one's thinking, listening, and "speaking" abilities. It included on-line, worldwide Table Topics, brief attempts to think and speak extemporaneously on short notice on your feet.

Caleb Burns of Oregon (US west coast), a frequent contributor to alt.org.toastmasters, posted a partially finished speech and got suggestions for improvements from toastmasters as far away as Japan!

Around the World in 80 Ways - (cont'd)

Honest, I saw it all on my QL. scrolling across my Acorn screen in green, white, red and black.

Other discussion groups concerned "men's and women's issues" (soc.women, soc.men). A favorite group has been alt.comics.peanuts, devoted to discussion of the world-known, wryly humorous, philosophical comic strip "Peanuts," by Charles Schulz. I've just recently retrieved the FAQ (Frequently Asked Questions, another Internet buzzword) for alt.comics.peanuts and learned, for instance, the real-life inspiration of Charlie Brown's heartthrob, the little red-haired girl, and the names of all of Snoopy the beagle's siblings.

=====
Date: Wed, 4 Oct 1995 23:13:24 - 0400
To: dlaverne@use.usit.net
Newsgroups: alt.comics.peanuts
Subject: (fwd) The Peanuts FAQ File - peantfaq.txt [01/01]
From: bang@wheel.dcn.davis.ca.us (Derrick Bang)
Lines: 1423

Revised September 26, 1995

- 1.2 Is there a World Wide Web (WWW) page devoted to Peanuts?
 - 1.3 Do FTP sites exist where I can download Peanuts .GIF images?
 - 1.6 Is there any great Peanuts software "out there"?
 - 3.1 When did Peanuts begin?
 - 3.2 Have all the newspaper strips been reprinted in books?
- (etc.)

=====
I have also subscribed to soc.culture.russia, soc.culture.bolivia, and soc.culture.caribbean, simply to "hear" people from other parts of the world discussing issues important to them without the discussion's being put through the filter of US media. The discussions range from recipes to local cultures' ability to survive encroachment from culture of more wealthy countries to non-US politics. The tone is anywhere from calmly informative to vitriolic.

From soc.culture.caribbean I got one posting which my friend Vere Henry says is a good commentary on the history of calypso and soca music. Vere is originally from St. John's, Antigua, and has led all the Caribbean steel bands in this area, including the two groups I've played with.

=====
From sthomas@decan.gate.net Thu Dec 22 22:52:28 EST 1994
Article: 10114 of soc.culture.caribbean
Newsgroups: soc.culture.caribbean
Path: news.usit.net!news.sprintlink.net!tequesta.gate.net!decan!sthomas
Subject: Re: soca music
Lines: 143

((cuts))

:I'm probably less of an expert than any of you but if you look at the origins
:of Calypso, the melody and rhythm was only a vehicle fo support the lyrics,
:which was the whole reason for calypso. Old calypso melodies were
:"recycled" over and over again with new words...

...The old formulas can be a lot of fun too especially in the "extempo" competition, where it is a requirement that the competitors make up lyrics... the rhythm is formulaic and the emphasis is on lyrics... clever, boastful, "robber talk", political commentary, you name it... (etc.)

=====
Lately soc.culture.caribbean has been a source of reports which one never heard in the States of damage from this season's hurricanes.

Around the World in 80 Ways - (cont'd)

Even though English is putatively "the language of the net," postings in soc.culture.russia are often in Romanized Russian, and soc.culture.bolivia was all in Spanish, which I currently cannot read. All from my little S99.95 QL (Gold Card upgrade, and more). Really and truly.

WORLD WIDE WEB, MAILING & DOWNLOADING - One day at work while reading the latest printed job postings from IAEA in Vienna (Austria, not Virginia), I discovered the postings and conditions of employment were accessible electronically. That weekend I got onto the trusty QL, logged onto the Vienna computers, and FTP'd several job announcements and the conditions of employment file EMPLOYEE.COND to the US Internet host in Knoxville. (FTP is the Internet tool File Transfer Protocol). I later learned it was even simpler to access the job postings via the World Wide Web. The sequence became something like

```
lrun bootqtpi<enter>
F9          (to bring up the QTPI phone book)
"Dial" US Internet
connect to US Internet
username:
password:
USIT%      (the US Internet system prompt. The "%" tells you you are probably on a Unix system).
USIT% lynx<enter>
```

(US Internet Home Page displays in character-oriented form)

(enter "g"/goto)

URL to open: <http://www.iaea.or.at><enter>

(The final ".at" is the ISO Country Code for Austria).

Explore the links (known as "hyperlinks") in the Web pages until you find "Job Announcements", read individual Announcements on your screen until you find one of interest, then hit "m" for "mail file to yourself" and give it a valid internet address:

dlaverne@use.usit.net.

A short while later it's in my inbox in Tennessee at US Internet. I enter the EMail reader, [E]xport the mail message to a disk file on the host, then with the command

```
USIT% sz filename          (send from host via ZMODEM)
```

I end up with a file in my QL's RAM2. I then task-switch to SuperBasic, put the RAM2 file on disk, and on a 3.5" diskette I have a permanent QDOS-format record of job announcements from overseas. The actual work is done in seconds, far less time than it takes to describe it.

=====

Position Title and Grade: P-2

Organizational Unit:

Application Development Unit Systems Development Section

Division of Scientific and Technical Information

Department of Nuclear Energy and Safety

Vacancy Notice: 95/024

Date: 21 March 1995

Closing Date: 21 July 1995

Reporting Date: as soon as possible

Duty station: Vienna

Type of Appointment: Fixed-term

Duration: Three years

DUTIES AND RESPONSIBILITIES:

(...)

Around the World in 80 Ways - (cont'd)

Applicants should be aware that International Atomic Energy Agency Staff Members are international civil servants. As such, they may not seek or accept instructions in regard to their... duties from any government or authority external to the Agency...
(etc.)

=====

All while pounding the keys of my PC-keyboard attached to a QL with a Falkenberg interface. Really.

Other World Wide Web explorations: on a non-QL machine, while digesting Mark Rosenstein's Sailing Page. I stumbled across AC95 (America's Cup '95) in December of 1994. At the time I had forgotten there was an America's Cup coming up. When I got home, I managed to find AC95 again:

```
USIT% lynx<enter>  
go: http://www.ac95.org<enter>
```

and explored the dozens of hyperlinks. One of the links contained a signup for a mailing list for same-day race results. I gave my US Internet Electronic mailing address, and very shortly thereafter I was at home on my QL reading the daily race results of the Defenders' and Challengers' Series from San Diego. This was much superior to a two-sentence summary the next day in the local, non-sailing-oriented newspaper.

=====

```
From saicwww@gecko.cerf.net  
Date: Wed, 26 Apr 1995 16:56.05 -0700  
From: America's Cup 95 <saicwww@gecko.cerf.net>  
Reply to: raceresults@ac95.org
```

SAN DIEGO, Calif. (April 26, 1995) -- Team Dennis Conner beat America3 today by 52 seconds off Point Loma after trailing at every mark, including a 4:08 margin at the last mark. Today's win gives Team Dennis Conner the Citizen Cup and sets up the match between Stars & Stripes and Team New Zealand's Black Magic I for the America's Cup. Conner ... provided a comeback worthy of Lazarus.

Additional details will be available following tonight's press conference. For more news, photos, and video clips please check out the web site at <http://www.ac95.org>. To unsubscribe...
(etc.)

=====

I currently have a QDOS disk with about 40 files on it pertaining to AC95 races, which I converted to MS-DOS via DiscOver and sent to my sailing and chess buddy Gordon in Minneapolis.

Incidentally, AC95 is still on line (I just flipped over to QTPI and checked), with daily weather updates from San Diego and news bits on the next America's Cup as it shapes up for the turn of the century.

I've also explored Web pages having to do with Civil Air Patrol, the civilian US Air Force Auxiliary, SETI (Search for Extraterrestrial Intelligence), and the Foxpro IO_Address (a home page in the UK devoted to the Foxpro database package, recently bought up by MicroSoft) and many, many other subjects. Many of my URLs or "addresses" for Web exploration came from the Scott Yanoff Special Internet Connections List, a compilation often cited in articles, and obtainable by subscribing to an electronic mailing list, or by FTP.

The World Wide Web is hard to define, but easy to recognize when you see it. The World Wide Web Unleashed takes pages to try to define it. Find it and you'll recognize it.

INTERNET RELAY CHATS - Foxpro, the commercial home computer database package, has been the subject of Internet Relay Chats (IRC's) since spring of '95. Three individuals, Colin Keeler of South Dakota, Rick Morley of Atlantic City, New Jersey, and myself were instrumental in getting the Fox IRC's started, talking them up on the Foxpro listservs, researching how and where to get an IRC client, etc. Malcolm Pitcher from UK, various people from Nova Scotia and others worldwide pitched in.

Around the World in 80 Ways - (cont'd)

Most of the initial legwork was not on the QL; rather, it was on That Other Type Small Computer. at work. However, I particularly remember one IRC scheduled for 8pm EDT on a Monday, when I certainly was not at work, wherein I had scrolling across my Acorn screen <Jeff_B> from Hong Kong, <Malc> from UK, <Jerry_R> from Nova Scotia, <PatB> from Florida, <Cindy_G> from Maryland, perhaps <ColinK> from South Dakota, <Rick> from New Jersey, and others--all simultaneously.

For those of us in Eastern Daylight time it started at 8pm, but for <Jeff_B> it was already 8am tomorrow. <Malc> in UK went in to work in the wee hours of the morn and fortified himself with coffee. We all said our hellos, IRC'ed, and said our international goodbyes. And yes, it's possible to have half a dozen different conversational threads on-screen at once.

And my home screen looked like (these are excerpts from the original chat log, not necessarily consecutive in the original):

```
=====
[ DougL ] Jerry: of course, not thinking fast.
< Jerry_R > The last IRC chat didn't require kicks or bans tho
[ Malc ] We're too civilised
[ PatB ] no we're not! :)
< Jerry_R > for example /ban #msvfp *!*goof@*.foo.bar
[ DougL ] I have my pinky raised as I lift my teacup <g>
[ SERVER ] Jeff_B!jeffbhav@202.66.32.1 has joined this channel
[ Malc ] Pat: True - but (over in the UK) a standard spec is probably 486 66 with 4-8Mb, not enough for Win95
[ Jeff_B ] Hi!
[ PatB ] do you think Win95 will be bundled on systems as Windows 3.xx is today??
[ DougL ] hi Jeff
[ Malc ] Hi there.
[ PatB ] Malc: why so far behind??
[ DougL ] Where are you Jeff?
[ Jeff_B ] Hong Kong.
[ Malc ] Jeff: What time is it there?
[ Jeff_B ] 8:23 Tuesday morning.
[ SERVER ] Rick ... has joined this channel
[ Malc ] I've got to get some caffeine (falling asleep)--back in a mo!
< Jerry_R > <--Nova Scotia
[ DougL ] irc does sort of erase time zones.
[ Rick ] Anyone: re the seek vs. locate threads going on... anyone use a browse for 'this and that' for searches?
< Jerry_R > I did for an app last year - the user wanted to be able to search on any combination of all fields in a
database in one sweep
[ Malc ] Jeff: Thus: <a href = "mailto:mpitcher...."> mpitcher ... </a>
[ Rick ] Doug: has Colin been by?
[ DougL ] Rick: haven't seen/heard him.
[ Jeff_B ] Has anyone run the Beta Visual Foxpro on BETA of Win95?
[ Malc ] I've got a copy Windows V1.2 on my shelf - any buyers?
[ Malc ] On 160K 5.25" disks!
[ DougL ] tuppence?
[ Jeff_B ] Antiques fetch good prices
< Jerry_R > antiques like my current computer
[ DougL ] Jerry: 286? 386? Would you believe a Sinclair QL, BTW?
[ Malc ] Doug: Done!
[ DougL ] Malc: thanx. Could you xfer that to QL-formatted disks, please?
[ Malc ] Doug: First thing in the morning.
[ SERVER ] CindyG ... has joined this channel.
[ CindyG ] Evening all. Hi Doug
[ Jeff_B ] Hi Cindy.
```


Around the World in 80 Ways - (cont'd)

<Jerry_R> ... VBUNS! Visual Basic Users of Nova Scotia.
[DougL] Jerry: and what are you going to call the Pascal folk in NS? Sorry ... :-)
[Jeff_B] How about User Interface Designs for Visual Foxpro for the next [chat]?
[Malc] Or RBase?
[CindyG] Has anyone worked with Delphi? Specifically getting it to read a Foxpro .dbf?

(etc.)

=====

GOING TO THE WELL - One evening after having read part of Howard Rheingold's The Virtual Community, I telnetted to the WELL, the famous "virtual community" centered in the San Francisco Bay area. (The WELL is a central subject of Rheingold's book). I browsed their "conferences" available through the "guest account" and logged off. All for a local phone call from my QL and modem.

That was probably winter of '95; this fall I tried again just to make sure I still remembered the host's address (really difficult):

```
USIT% telnet well.sf.ca.us<enter>
```

Telnet effectively logs you onto the remote computer in question, in this case a computer known as "well.sf.ca.us" (also known by a four-part number).

This last time I downloaded the WELL file "What Is the WELL" by giving a valid Internet EMail address to the WELL computer and requesting the file be sent. Then it was another export from mail and

```
USIT% sz 100_What_Is_The_WELL?<enter>
```

and I soon had information on the WELL on a QL 3.5" disk.

WELL stands for Whole Earth 'Lectronic Link. The Internet Unleashed says WELL was founded in 1985 and grew out of practices and concepts promoted by Whole Earth publications of Sausalito, California. Rheingold is (or was) a prolific author on hi-tech issues and a heavy participant in WELL conferences. It's an even bet he had a hand in the "What Is the WELL" file, which gives some information beyond what Unleashed has.

GOPHER, VERONICA, AND ARCHIE - These are Internet tools, not comic book characters. Gophers use menus to point to various files and information resources; Veronica allows searching of Gopherspace (a subset of Cyberspace) by keyword searches. Archie allows searches of Cyberspace for specific filenames.

I crawled through various gopher menus, starting on the US Internet System, to find the famous University of Minnesota Gopher (and MINITEX Veronica Service, one of the best Veronicas I've found). I tried doing a netwide Veronica search on the keyword "algorithms." However, a 14.4 modem apparently just isn't up to the job; gopher or some part of the whole attempt timed out. Previous Veronica attempts of mine had been on the local community college's equipment. Their "weak link", a 56kbps line, was considered a bottleneck at the time.

I did succeed once, as I remember, in doing an archie search netwide for copies of the Mosaic Web browser. You know -- that browser that runs on Those Other Machines one hears about.

MISCELLANEOUS - I am learning some Unix while hooked up to US Internet via QTPI. When I'm on their system, my QL is essentially a terminal hanging off a Unix system. I grab Reichard & Johnson's Teach Yourself UNIX and go through a chapter.

I've tried to get on some of the chess servers listed in the US Internet menus, but to no avail (always busy). I registered with "elibr" software library in Berlin, a massive collection of algorithms, software and test packages with links to other large software libraries.

There are too many goodies out there to go over them all. Oh, and did I mention I found them all from a QL? For the cost of local calls. Honest.

Around the World in 80 Ways - (cont'd)

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QL Pente - A Review

Huber Heights, Ohio, USA - Tim Swenson

Besides computers, board gaming is one of my other hobbies. My interest goes the full gamut of board games, from hex-based war games to the abstract games, such as Othello or Kensington.

I've liked Othello and even played it on the QL. But, it was a little too simple. Then I ran across Pente. Pente had just the right complexity, yet was simple and elegant.

Pente was invented by Gary Gabrel in 1973 as an extension to the game Go-muko. By adding one rule, the capture rule, the game Pente as created. Yet, the addition of that one rule, added complexity to the more simplistic Go-muko, changing the basic strategy. Pente reached it's peak in popularity (and sales) during the mid-80's. It's bright, shiny stones and classic looking board added to it's popularity. This is about the time I picked it up.

Since I've always had problems arranging playing time with opponents, I try to find computer versions of board games so I can play against the computer whenever I had free time. I've been doing this for years with Othello, but not Pente. Well, now there is a version of Pente for the QL, and it's even Pointer driven.

QL Pente is written by Jerome Grimbert of France and is freely distributable (freeware). The game allows one or two players, with the computer playing the opponent in the one player game. It is written under the Pointer Environment (PE) and supports the typical PE options, such as sleep, move, and resize. There is a button for information about the program, a button for changing the number of players, and one rather odd button. The button looks like a computer chip, a question mark, an exclamation mark, and some other item all in one button. Since the program does not come with any documentation I've worked figured out that the button tells the computer to make the next move, no matter who's turn it is. If you keep clicking this button you can get the computer to play against itself.

Even though the program does not come with documentation it is fairly easy to use. You first must know the rules of Pente, then you must know the Tournament rule of Pente. It's an additional rule that says the first player must make his 2nd move no closer than 3 intersections away from the center of the board (the first mandatory move). The program will not let you break this rule. So what you think is a valid move using the basic rules is invalid in this game.

As for knowing the rules, the program knows them all and enforces them. It does not let you put a second stone on an occupied space (of either color). When making captures, it knows when you've made a capture and removes the opponents pieces off the board.

QL Pente - (cont'd)

Since I have not played the game in a while and am not a master at the game. I could not test the full capabilities of the computer as an opponent. As an average player, I did have to watch what I was doing. I could win some games, but I lost some games. Only time will tell how well it plays.

The program does have a few annoying glitches. The program default is two players. You have to select One Player before each game, otherwise it will default back to Two Player. Once a game has started, you can't reset the game and start over. You have to finish out the game or exit the program. This is only a problem if I've goofed up in a game and want to start over. There is no "take-back" option in the game. If you made a stupid move you have to live with it.

The look of the game is very good, but it's not quite up to par with a commercial game. But for a game written in one's spare time and distributed for free, it looks good enough. I've seen some other freeware games (MineField not included) and they looked fairly awful. Luckily Pente does not fall in this category.

As for getting this game, if you are a Pente player, past or present, then DO get this game. If you are kind of interested in board games, give Pente a try. You can't beat the price.

If you are interested in learning more about Pente and it's rules. THE book on Pente is "Pente Strategy" by Tom Braunlich, the 1979-81 World Pente Champion. It covers all aspects of the game. I plan to re-read it and see how well I can beat the computer.

QL Pente may be available on the Anon-FTP servers ftp.nvg.unit.no or maya.dei.unipd.it by the time you read this. Or you can get it from me at the QL Hacker's Journal, 5615 Botkins Rd, Huber Heights, OH 45424, swensotc@ss2.sews.wpaafb.af.mil. I was lucky enough to be one of the first to get this game, as the author directly e-mailed a copy to me.

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Town Crier Announcements of Upcomming Events

4 November 1995

(Saturday)

International QL Meeting

St Joris College

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(Sponsored by: Sin_QL Air)

11 November 1995

(Saturday)

Quanta Workshop

Surrey

GREAT BRITAIN

Contact: Ken Bain

Tel: +44 01932 347432

19 November 1995

(Sunday)

Italian QL Meeting

Via Fratelli Cervi 70

Reggio Emilia

ITALY

Contact: Davide Santachiara

Tel: +39 522 300409

2 December 1996

(Saturday)

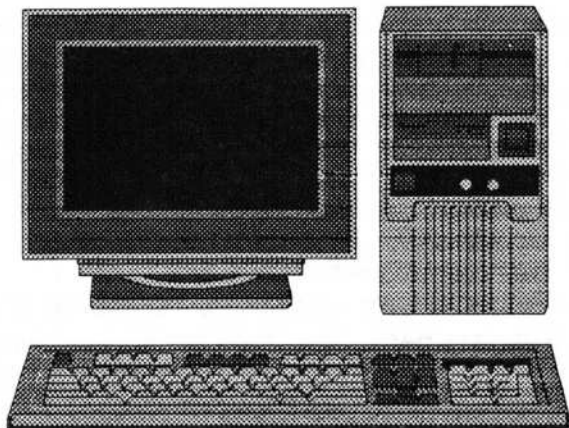
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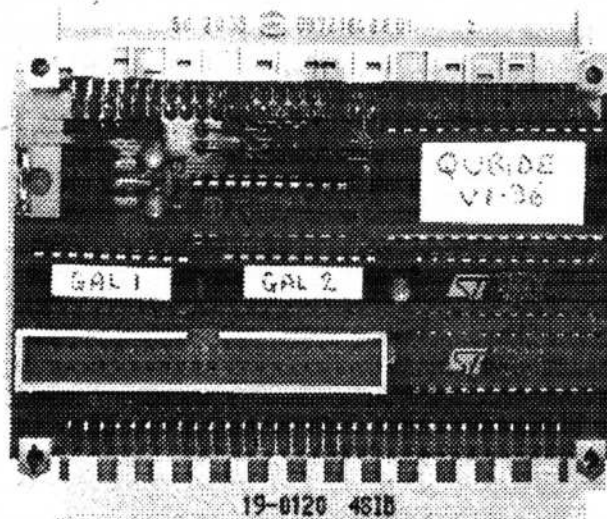
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Because there isn't any. DP, whose QL commitment continues, makes this super offer to celebrate the birth of a marvellous baby daughter Michelle, now through all her early problems, to Julie and Freddy. **THE QL COLLECTION** is licensed for use by the purchaser alone, who by buying it agrees not to resell or otherwise pass on any part of it, or of any DP software already possessed. Technical support is negotiable: full details are supplied with the order for you to take up should you want to do so. DP reserves the right to withdraw **THE QL COLLECTION** offer at any time later than 14 days after your receiving this magazine, so please do hurry.

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THE QL COLLECTION

QXL In Command

Bedford, Massachusetts/Plyesville, Maryland, USA
Al Boehm & Tom Robbins

IOMEGA Zip Drive: I (Tom) recently purchased an IOMEGA Zip Drive for US \$200. It connects to the parallel port of the PC and, after loading appropriate software, functions as a 100 Megabyte removable medium hard drive. The disks (\$15 each) are slightly larger than a standard 3.5 inch floppy and come preformatted in PC or Macintosh format.

What good is this to us QL/QXL folks? Well, the drive is "just another hard disk" as far as the QXL is concerned. You can issue the command "FORMAT WIN2_50" (assuming that Zip drive is your D drive in PC land) and the QXL will happily prepare a 50 Megabyte section of the drive so that you now have another 50 Mb of storage for your QXL. The disks can be removed and replaced in the same session, although not all at once. Now if some genius out there could write a device driver for the SuperGold Card and its parallel port.

SyQuest Drive: I (Al) bought a SyQuest 135Mb removable drive for \$200 and extra disks for \$19.95. It is an IDE device although there is also a SCSI version. I have formatted a 125 Mb QXL section on one of the disks and it works just fine. If 125 Mb seems large, it is! My standby QL programs only take about 10 Mb. However, if you are generating simulated SVGA cloud pictures at 120K a picture, it doesn't take long to fill up 125 Mb.

But the reason for me buying such a drive instead of another or larger fixed hard disk is worth pointing out. My wife, my children, sometimes even their friends, use my PC. Good, that's what I bought it for. However, Windows and even DOS allow things to be easily fouled up, particularly when there are multiple users. This has happened several times now and once on my system at work where I am the only user. So I have my QL programs on a separate disk and keep it in a safe place. I keep a few of the QL programs (particularly Xchange/Quill) on the fixed hard disk for my wife and others to use. When things go wrong, no more yelling at the offenders, I simply copy the entire QXL file back to the hard disk.

SMSQ/E: At the Oak Ridge QL fair, I purchased SMSQ/E from Jocham Mertz. SMSQ which is updated regularly and sent free to QXL owners and SMSQ/E are parallel developments. Most of which is in one (example SBASIC) is in the other. However, SMSQ/E has additional capabilities that for me make it worth buying. James Hunkins gave a good review in the March/April 1995 IQLR so I won't try to cover all its features but instead show some of the tricks I have found useful. The screen resolution (QL, EGA, VGA, or SVGA) can be changed on the fly. I can be multitasking some high resolution pictures and while writing a description of them in a QL resolution Quill. I just DO QL and CNTL C.

The DO QL does a file named QL which consists of setting ALTKEY w to make windows #0, #1, and #2, to full width, ALTKEY t to set windows to two columns, and ALTKEY b to rub out the entire screen. The SMSQ/E keyword DISP_SIZE 512,256 sets the display to 512 pixels across and 256 down, in other words, a QL display. The last line actually sets the windows:

```
ALTKEY 'w','WINDOW 512,220,0,0:WINDOW#2,512,220,0,0:WINDOW#0,512,36,0,220:
  paper 2:ink 7:paper#2,4:ink#2,0:paper#0,0:ink#0,4:CLS:CLS#0',"
ALTKEY 't','WINDOW 255,220,255,0:WINDOW#2,255,220,0,0:WINDOW#0,512,36,0,220:
  paper 2:ink 7:paper#2,4:ink#2,0:paper#0,0:ink#0,4:CLS:CLS#2:CLS#0',"
ALTKEY 'b','window 512,256,0,0:paper 0:cls>window 512,220,0,0',"
DISP_SIZE 512,256
WINDOW 512,220,0,0:WINDOW#2,512,220,0,0:WINDOW#0,512,36,0,220:
  paper 2:ink 7:paper#2,4:ink#2,0:paper#0,0:ink#0,4:CLS:CLS#0
```

I also have a EGA, VGA, and SVGA DO files but with the appropriate pixel sizes:

	whole screen		Two columns		
	#1 and #2	#0	#1	#2	#0
QL	512,220,0,0	512,36,0,220	255,220,255,0	255,220,0,0	512,36,0,220
EGA	640,310,0,0	640,40,0,310	320,310,320,0	320,210,0,0	640,40,0,310
VGA	640,440,0,0	640,40,0,440	320,440,320,0	320,440,0,0	640,40,0,440
SVGA	800,560,0,0	800,40,0,560	400,560,400,0	400,560,0,0	800,40,0,560

QXL in Command - (cont'd)

To compare SMSQ versus SMSQE, I sometimes execute one, sometimes the other. But the startup boot must do different things for SMSQ versus SMSQ/E. So far I have never had the same version number on both, so I use the version number to differentiate:

```
rem QXL BOOT by A.Boehm. if ver$(-2)<2.57 for SMSQ/E 23 Aug 1995
IF ver$(1)<2.57 then OS$='SMSQE':else OS$='SMSQ'
IF OS$='SMSQE' then HOT_GO: DISP_SIZE 640,480: KBD_TABLE US
IF OS$='SMSQ' then TK2_ext:LRESPR win1_util_ptr_gen:LRESPR win1_util_wman
DATA_USE win1_basic_:PROG_USE win1_BOOTS_
DO vga
```

Notice that SMSQ/E doesn't need ptr_gen nor wman; they are built in. On the other hand SMSQ/E needs to start HOT_GO so that my ALTKEY definitions work. Note also that the last line of the boot is a DO. DOs can be chained this way at the end but they can not be in the middle of a program since they don't know where to return to.

TURBO and QLiberator: Stan Canton wrote in Quanta that he was having trouble compiling with TURBO. This was surprising to me since I had TURBO compiled several thousand lines of SuperBasic on the QXL and hadn't run into anything I couldn't work around. Of course, I didn't expect TURBO to handle some of the new structures in SBASIC, for example, a NEXT without a label. But these were easy to understand and reconcile. However, it appears he has a valid point, INKEY\$ just does not seem to work in TURBO. QLiberator handles it OK. So the problem is not in SMSQ or SMSQ/E per se, but in the interaction. He also was having trouble with FILL or FILL\$ but I was able to Turbo compile these successfully. Since Turbo's default_device will only take a 3 letter drive and all my Turbo programs are in a director (win1_Turbo_), it may of some use to show my QXL boot for turbo:

```
LRESPR win1_Turbo_turbo_tk_code
default_device 'dev3_'
DEV_USE 3, win1_Turbo_
```

Wish List: About a year ago, Tom and Al gave a list of the things they would like to see in the QXL. Amazingly and with great thanks to Miracle, all but direct access to the PC files on the hard disk have come to pass. Now we still wish for hard disk direct access, but understand the confusion of PC device drivers. Nevertheless, perhaps a slower two stage process is possible. Have the PC part of SMSQ read part of a hard disk file and send it to a buffer in ram. Then send that buffer to the QXL via win3_ say. CD roms in PC format and other devices in all kinds of strange formats could easily be accessed, albeit somewhat slower then then QXL reads QXL formatted win1_, win2_, etc.

Another wish is for more colors. It seems to me that I would be willing to have 8 or even 4 colors in each window if I could specify what those colors were. I envision a PALETTE#2,1,109,50,221 which would set color 1 (which is blue in mode 8) in window #2 to a 24 bit color of 109 red, 50 blue, and 221 green.

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>>> QDOS, QL - the Future

Duisburg, GERMANY - Jochen Merz

First of all, this article describes my personal impressions - I'm not a fortune teller! Some people ask about the future, and it's an important question. When I say QL, I mean everything which simulates the operating system of the QL (you all know by now that my main machines are ATARIs running QDOS or SMSQ/E), when I say QDOS, this includes SMSQ, SMSQ/E and Minerva, of course.

Is there a future? The answer is definitely YES! I am not planning to give up on this fascinating operating system and there are good reasons why. Most of you know some of the reasons yourself, otherwise you wouldn't be using the QL any more. We thought that with the release of SMSQ/E a big sign saying "we carry on" would be set, and the support and improvements on it show that we still like it and look into a long future. Now on to the reasons why:

The first, and very important reason is "The Community". Everyone who visited some QL shows knows what I mean. But this has nothing with the technology to do, it is just a good reason.

Many customers use the QL in conjunction with another operating system. They do on each system what they cannot do on the other. Users with a QL emulator in an ATARI will also use TOS, users with a QXL in a PC will also use Windows. And there is nothing wrong. Nothing to be ashamed about. It widens your scope and, in many respects, shows how good our system is.

Agreed, Windows programs look much better, but is the look all that counts ...? I had a look at other machine code development systems for people who (we hope) are interested in our system. And, you won't believe it: our development systems are much, much better than everything I found on other platforms, including Windows. Writing in Assembler is out, the mainstream software houses don't seem to be interested in supporting peoples' intellectual challenge on the hardware, all they want is "Users" who use the prepared software. Of course, you get "visual" tools, which, again, look good, but are restricted in many ways. All you can do is what the designers allowed you to do. And, they are slow too.

It is amazing how less performance you get out of PCs which, theoretically, should be 50 or 100 times more powerful and tuned in every respect compared to a QL. But a lot of this power is eaten up by the operating systems and applications.

I do not own a PC. For a private individual it is not necessary to have a PC, but for a company it seems to be getting obligatory. Some suppliers do not send away printed catalogues, they send CD-ROMs. I had a look at one of the CDs at a friend's PC. It occupies over 4MB on his harddisk, and it is not very fast to use. So, if I think I get 10 CDs from 10 suppliers, I loose 40MB on my harddisk. If I then compare the time to look up details of a specific monitor out of 10 printed catalogues and out of 10 CDs - guess what's faster! I have probably checked 20 catalogues in the time of just 1 CD. And I can compare paper details, something which I can't do on the screen. So, that's not really practical, it's planned to be fun (and, honestly it's not even fun).

A good example of how bad things are is T-Online. It is a service similar to Prestel in England or Minitel in France, the previous name was BTX or Datex-J. You can get train time tables, do your home-banking, book your holidays etc. It is quite expensive in Germany, as you have to pay four times in total for making one call: you have to have your telephone line (monthly charge), the call rates, plus a T-Online monthly charge of DM 8.- plus 6 Pfennings per Minute in addition to the call rates (and, if you use other services in T-Online, their charge will come on top of these four charges). You see, it's not cheap. However, my bank announced that from next year on, it would be advisable to use the system, as they will charge DM 1.- for every non-electronic transaction (i.e. paper-based). As a bonus, every T-Online bank transaction counts as 1/2 transaction only! In the end, I'm being forced to use T-Online for larger numbers of bank transactions.

I ordered the registration and eventually got my passcodes. To access T-Online you need some software. With the passcodes I got a CD containing decoders. I tried to install it on a borrowed PC, without success. I wasted nearly a whole Saturday without any result. Everything is automatic. You click here, you click there, you see nice pictures, the program even tries to figure out automatically which modem is connected. Finally, it dialled, got a

>>> QDOS, QL - the Future - (cont'd)

connection, and automatically sent the log off string. There was no way to force it NOT to send the log off string.

I then bought a magazine with a lot of PD communication software on CD. It contained 9 (in words NINE) T-Online decoders, NONE of which worked. Two refused to run the installation program at all, three did partially install, and the rest did not connect after installation. I do not want to get into detail, but it was unbelievable. The worst experience was: after the automatic installation of one program everything seemed to work I entered my secret numbers. The program did not do anything. I removed it completely from harddisk (I thought) and re-installed it, this time with the user-configurable information. When the registration screen appeared, it already knew all my details!!! Where the hell did it put my secret numbers? I don't like the idea that my passcodes are somewhere in a hidden file on a PC on loan! In the end, I gave up. After deleting all directories which were created automatically, the harddisk was over 1.5 Megabyte less empty than before the start - no one knows which files are related to what.

The main problem is: everything is out of control of the user. You select INSTALL, and it does whatever it wants to do. Modify all sorts of files, copy lots of files into various directories etc. etc. - and this is one of the main advantages of QDOS. Your BOOT is ALWAYS under your control, and the machine does not do any invisible operations during boot. Some people think this is a disadvantage, because they think that setting up a BOOT file is difficult. Wrong!

To get into T-Online I turned my ATARI into its native operating system and loaded a fairly old decoder, dated 1991. No fancy icons, no 256 colours, just black and white. And within less than three minutes everything worked! I am not a big fan of TOS, ATARI's own operating system, and I do not want to reset my machine every time I need to go into T-Online, therefore a QDOS-Decoder is now under development.

I'm not telling you that everything except QDOS is bad - that's not true. It was just a demonstration how lost you are if things don't work as expected. Some QL users might think now: I'm lost with some QL software too. They might feel this way, but that's not really the case. They can do the installation (if any is required) manually, step by step. Add every required extension step by step manually and see what happens. There are lots of ways to find out what is going wrong, because the actions are not invisible to the user, like in Windows.

Software never can be 100% perfect from the start, there are simply too many combinations possible. Even the QL hardware allows far more combinations than suppliers could test: a QL might have a Gold Card, a Super Gold Card, a Qubide, a keyboard interface, a SuperHermes or Hermes, Minerva etc. etc. even EPROMs containing software put in by the user. All these items interact, and even if it is only that a simple extension shifts the code by allocating some memory. The number of possible combinations is very, very high, as Tony said: we have more possible combinations than customers! A PC consists of more components and every component can be supplied by lots and lots of different suppliers - and all cards, all drives, everything behaves slightly differently. There are probably more possible combinations of hardware than all programmers in the world could ever test in their lifetime, as every day more and more products appear. It is already absolutely out of control!!! If you now multiply this by the zillions of possible software configurations and program interactions and different versions, then it is a miracle that things work at all!

The essence is: we have an operating system which is under our control. It is growing and improving. The interaction between suppliers and users is very good, the suppliers try to fulfil user's demands and the users help the suppliers detecting bugs - everybody is helpful! Without the effort of everyone including magazine and club activities the QL would be dead already. Therefore, it is up to all of us to keep it alive!

When I think about the daily usage of my computer system and compare it against others, then there's only one conclusion: there is, after more than 10 years, still no alternative choice.

>>> **NOW:** (After the journey into other systems back to what we know and love.)

SMSQ/E: the current version is extremely stable. No hardware-related problems anymore, the new ATARI harddisk driver works reliable even on the 2 or 3 critical harddisks. The new QXL interface works reliable. The number of "incompatibility" problems in SBASIC is now less than the number of requests to introduce new

>>> QDOS, QL - the Future - (cont'd)

features which you do not find in QL's SuperBASIC. This means, it is now time to put in some more extra features - watch out!

FiFi: FiFi has been greatly improved again, some of the new features include the search for hex-strings (i.e. you can now search for everything) and a "Space" option. This "Space" option allows you to search for "white spaces", i.e. an undefined number of SPACES or TABs between words. If you want to search for, say "TST.L D0" but you do not know if there is one space, more than one space, or even a TAB as a separator, then FiFi will find it now! This is also useful for "manually formatted" text, i.e. where more than one space is between some words to block-justify. Updates from any V3.xx to the current one are free!

PBOX: at the moment I am installing PBOX - Phil Borman's new Bulletin Board System. It will go into an internal test phase first, then I'll have the old QBOX running at the same time as PBOX (on different lines, of course) and if the test succeeds, PBOX will take over. I hope to provide 28.800 access at the same time of the introduction of PBOX. But, even with a slower modem, there are many, many advantages in using PBOX. Lots of them on the sysop side, and also lots on the caller's side: ZMODEM protocol supported, multi-language menus, ANSI menus etc. etc. Regular QDOS+SMS Box Duisburg (0203-502013) callers will be informed via this bbs.

QD: The current version is 8.04. Everyone who has 8.00 to 8.02 should get an update - more icons since 8.02 and more actions on existing icons! 8.04 has a highly improved help system and some new parameter string keys - the help windows now stack properly, especially if you do help on help on help .. it's very neat in higher resolutions. You can now define QD's window origin and size from the command line. As these features were required for the new help, I thought they could be useful to some users.

Language dependent modules for SMSQ/E: as the interest is quite big, you can now find a file LANG_BAS (written by Tony Tebby) in the SBASIC area of the QDOS+SMS Box Duisburg, which is a fully working BASIC program which provides a good base for creating your own keyboard tables and message tables.

?? PRIMUS ??

With the intention to develop a reliable and powerful QL compatible computer which could be used continuously in an industrial environment a modular computer system has been developed. It has five main components.

1. micro computer
2. QL compatible add on board
3. backplane with 7 slots
4. expansion cards
5. 19 inch case and power supply

1. micro computer: The microcomputer is an independent system, which can be mounted into any 19 inch case (It measures 220x100mm). It is build fully in CMOS, therefore the power consumption is low and -- if used in a standard temperature area -- doesn't need a fan. A 68HC00 CPU at 16MHz combined with 2 MByte static RAM gives you necessary power. You have a LED which shows you the current state of the microcomputer (RESET, HALT). There's a RESET key to reset the microcomputer and a HALT switch to halt the microcomputer temporarily.

While the QL has its expansion cards area in memory from address 0C0000 to 0FFFFFF the Primus has its one directly under 16MByte and it is nearly 1MByte big (from F00000 to FFBFFF). The expansion cards in this area are recognized by the MINERVA operating system without any alternations. QDOS has to be altered slightly to take care of the new area when searching for expansions.

The operating system, up to three QL ROM expansions and the boot loader are placed within a 128kByte

?? PRIMUS ?? - (cont'd)

EPROM. This EPROM can be replaced by an EPROM with a maximal size of 1MByte for additional data. The boot loader loads the operation system and the QL ROM expansions into the 16Bit wide RAM. There the CPU can access it without any wait states. Also, while bootloading, date and time will be transmitted to the QL clock from a real time clock. The RTC is powered by a special capacitor (0.1F) while the system is off line.

The microcomputer itself has a socket for an EEPROM (electronical erasable PROM) with a maximum size of 16kByte that can be used e.g. for important user specific data.

A watchdog timer is used to control the program flow. If the normal flow of operation is disturbed by any reason and thus the watchdog timer is not reseted periodically any more it causes a RESET. The original program can be restarted by your boot program.

Less important for a QL compatible system are the alterable interrupt priorities for external and RTC interrupts, the wait states and the error handling after bus errors.

2. QL compatible add on board : The add on board (160x100mm) contains the three QL specific components ZX8301, ZX8302, IPC 8049 plus 32kByte screen memory. The competing memory accesses of the ZX8301 and the micro computer are controlled by a logic circuit, so any disturbances are avoided.

Three 9-pin SUB-D sockets for the two serial ports and a CGA monitor connector are connected via IDC plug boards. In the same way connected is a 25-pin SUB-D socket for the matrix keyboard. The matrix keyboard is used, because it allows you easily to use custom made keyboards. Such custom made keyboards can eventually be integrated into the 19 inch case.

3. backplane with 7 slots: The buffered backplane has a total of seven expansion slots with QL-compatible signal occupation. The slots are powered at the backplane side with +5V, +12V and -12V. The backplane can be mounted in any 19 inch case. The bus system has all necessary signals: address lines, data lines, DSL, RWL, DTACK, E, RESETL, EXINTL, CLK (16MHz) and FC0, 1, 2 which are sufficient for most QL expansions cards.

The DSMCL signal line is not used anymore and therefore not necessary anymore!!!

4. expansion cards: You can connect each QL compatible expansion card to the bus, provided it does not need more than the signals mentioned above.

The most important expansions are controller cards for hard disk and floppy disk drives. For use with control applications cards with analogue and digital input and output are matter of priority.

Contrary to the QL the bus has a higher phase, therefore expansion cards have to be able to treat the higher velocity. For example the access time for EPROM's should be less than 150 ns.

5. 19 inch case: The 19 inch case gives you physical stability (compare this with a three to four feet long QL!) and protects your Primus from environmental influences. The insertion technique simplifies the exchange of single components, you are not forced to disassemble the whole case. A industrial power supply (as every other component this also comes in 19 inch insertion technique) which can be powered within the range of 93V up to 264V allows you to use it everywhere in the world. A mains filter additionally takes care of an undisturbed working condition of the system.

For additional information, please contact:

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64285 Darmstadt
Germany

QXL...at Full Throttle!

Zapresic. CROATIA - Zeljko Nastasic

After a lot of deliberation, I finally succumbed to its allure and bought a QXL. Very strange for a QL user who does not own a PC. And a very strange QXL as well - one which originally came without a 68040 CPU.

Well, the story actually goes in a quite roundabout manner:

My day's work involves solving many unorthodox problems, which are 'normally' solved by using a PC. Or, I should say an attempt at a solution is done by using a PC. This is often very problematic, so I have resorted to my old and trusted QL at home countless times. You would be amazed how complicated it is to write a simple routine to control something over an RS232 port using a PC. Why do I have to wonder about the peculiarities of this serial chip when I only want 19200 serial comms? What's a 'huge' memory model? Even worse - trying to get some graphics on a high resolution screen. Unfortunately, under the relentless pounding by 'Do it all and even cook coffee' programs the exclusively PC users around me have very strange ideas how things should be solved, they always tell me I need this or the other library and a C++ compiler, or program so-and-so, or something else costing at least \$400. PC programmers seem to have forgotten how to program anything to do with hardware. Incidentally, if anyone is thinking of Sun workstations and similar, try grafting a piece of hardware onto one of those. I'd be interested to hear about the results!

For years I have been telling them that 'I only write a few lines of Basic which access this device and then with a few simple loops and exits I do so and so on my old QL'. It took them about two months to stop laughing and start shrugging and they are still at it today.

Recently a problem came up requiring writing a disassembler for a rather exotic processor. I started working at it on the QL (in SuperBasic of course), but I soon realised it was stupid to spend time at home doing my work - so I decided to take the main QL to work with me. Unfortunately it was soon missed at home. So, I looked at the available cash, and a 68040 waiting for some better day, both in the same drawer of my desk. A call to Miracle solved the problem of a QL at work - I decided to buy a QXL. Something about having to get a PC sooner or later anyway did figure in there somewhere, in a very small way. For the record, I currently have only 3 programs which I use regularly and which work on the PC, so the sooner or later is more likely going to be later. I guess that in the end I'll use the QXL as a reason to get a PC.

Now this is where things get interesting - the 68040 waiting in my desk was pulled out of equipment as a part of an upgrade, and it had a very thin heatsink on it and a slightly thicker fan. It was kindly (thanks again!) provided by a QL user who will stay anonymous lest all of the potential and existing QXL users get ideas about extorting more from him.

The big question was what sub variant of the 68040 was it, and at what speed can it work? After a few minutes, I managed to get off the heatsink, which was stuck onto the chip by a very peculiar metallic foil, sticky on both sides. They say there are two kinds of glue - one that you can't stick anything with, and one that you can't get unstuck with anything. This one was of the later kind, but using the well known force and lever principle it surrendered, and the secrets of the chip were exposed. I read the insignia. And then I read it again. And again. No doubt about it - it was a fully fledged 68040, floating point unit and all, intended to run at (hold your breath!) 40 MHz! If this was taken OUT as a part of an upgrade, it must have been SOME upgrade! This clearly deserved another call to Miracle - and the answer was 'We never tried it, but it's possible it will work at 40MHz'. That was enough for me.

Finally, the day came and after yet another call to Miracle to fix the details of the delivery, at the International meeting in Italy I became a proud owner of a processorless 8Mb QXL. Stuart Honeyball of Miracle was very kind and even provided a heatsink for the 68040, which he said he got for testing, but it turned out not to be needed. After a few words with Stuart I decided to wait until I can test the QXL at a higher clock, this was especially hard since I needed to wait until I got back to work. The Italian meeting was on a Sunday, and our two-member Croatian 'delegation' started back home after an excellent dinner in a pleasant restaurant, which, due

QXL... at Full Throttle - (cont'd)

to extremely interesting company, went on to 1AM. I drove by home at about 8 AM, taking the 40 MHz CPU for the QXL and a few other odds and ends and went straight on to work, although I had a day off. Who cares about sleep and days off when there's a new QXL to be installed!

This, contrary to the manual turned out not to be so simple - there was no problem putting the fast CPU into it's socket on the QXL, and only a slight problem with fitting the heatsink onto it (whoever designed the retaining clip?!) - it had a heatsink before, didn't it, surely it wasn't there for a free ride? - but the problem that came up was that I actually had to pull out a board from the PC to get enough space for the QXL. It seems that PC manufacturers have a way of constructing boards and cases such that you can never use all the slots on the PC motherboard. Well, there goes the IEEE 488 interface board... By the way, the heatsink I used ~~does~~ not have a fan, although the original one had it (presumably because it was a very small heatsink). Having a fan would make things a bit messy as you would have to provide power for it. It turned out not to be needed, anyway.

Before ever getting the QXL I checked in the Motorola literature whether the 68040 will work normally at a vastly reduced clock - which, amazingly, they don't guarantee (and explicitly state it). Checking with Stuart at the meeting turned out that it does. After all, I never tried CPUs at frequencies vastly lower than they were designed for. I usually (blush) tended to 'test' them at higher frequencies... sorry - I can't help myself. A computer can never be too fast..

Then came the big moment, and the PC with the QXL in it still set at 20 MHz operation, was switched on for a trial run. Although the machine I use is pretty exotic (EISA with some very strange boards in it) there were no problems at all, and the monitor soon showed a rather small, but very well known QL start-up screen! It was kind of strange seeing it on a 19" monitor, so I quickly decided to configure the SMSQ file to start up in 800 by 600 pixel resolution. It took a bit of juggling with making a copy of the disc in MS DOS, but the same well known screen next appeared somewhat flattened in the upper left corner of the monitor. Following the instructions (yes, I actually DID read them beforehand) I soon had a win1_ formatting to 128Mb. It took far less than I thought it would, based on other people's comments at one of the shows in the past - a caching controller really helps things. OK, OK, so I use a powerful controller - sorry, I had nothing to do with what is in the machine. They actually forced me to use it because they needed the one which originally came in the machine, because (yes, you guessed it) they didn't have drivers for the caching one for a Microsoft something or other. It didn't bother me, and I refrained from publicising my opinion about their criteria. The controller has a Transputer T800 and is in my opinion far more clever than the PC it's plugged into.

Anyway, the odds and ends I picked up from home soon came into play and the well known buttons and an extremely old QPAC2 came up, this time with the mouse moving the pointer, without me making any previous arrangements.

At this point, a disclaimer might be in order:

Do not attempt to duplicate the following procedures at home unless you really know what you are doing! Besides the possible problems you might have, some of the procedures will render the QXL's warranty void, and if you do something wrong, you might end up with a much larger investment than you expected!

OK, that's done, now back to business...

Having established that the QXL is happily working, I pulled some faster clock oscillators out of my bag - they also came from my desk drawer, and were mostly pulled from discontinued equipment. This of course does not mean new ones won't do the job - in fact don't use 'recycled' components unless you can test them beforehand, and on proper testing gear! Cheating might cost you a lot more than buying new components.

The QXL uses a crystal oscillator to derive all timing and the CPU clock - that's the small metal can in the corner of the board. Originally, this is rated at 40 MHz, the clock frequency for the CPU is half the frequency of the oscillator. I had already prepared a 50 MHz and a 60 MHz oscillator to try out, to see if the QXL will work at 25 and 30 MHz respectively.

QXL... at Full Throttle - (cont'd)

Before you go about clocking the QXL at a higher speed, check what speed RAM chips it has. The speed is usually the last number on the chip, separated from the rest by a hyphen. In the course of time three speed grades of memory have been used on the QXL - 80ns (slowest), 70ns and 60ns (fastest). If you have the slowest RAM, proceed at your own peril - the 80ns RAM is unlikely to work over 20 MHz, but the problems might not be so obvious. Look for unexplainable crashes - if they occur, it's likely the RAM is too slow. 70ns RAM should be perfectly OK up to 25 MHz, and probably a bit more. 60ns RAM is fastest, and at present you cannot get faster chips on the market. If you recently bought a QXL it's most likely to have 60ns RAM on it. Mine does, anyway. Nevertheless, Stuart Honeyball warned me that the QXL might not work at a much faster rate, because of the slower glue chip - Miracle do faster (33 MHz) QXLs at request, but they use a faster glue chip which was still on order and could not make it to the Italian meeting. I decided that a heatsink on the glue chip (one I bought about 4 years ago for...something - I can't really remember what, but it seemed a good idea then) would be a good starting point, until the faster glue chip arrives by post. The glue chip works faster at lower temperatures, so cooling it down helps. The same is true for most modern chips, including CPUs.

Replacing the 40 MHz oscillator for a 50 MHz one showed that the QXL worked superbly at 25 MHz, with the CPU staying as warm as at 20 MHz - only slightly, that is. In all probability, using a good heatsink on the CPU and the glue will enable even the standard QXL to work reliably at 25 MHz, I think that has been done by other users.

Not having a faster oscillator, I had to settle (reluctantly!) with running the QXL at 30 MHz, by plugging in a 60 MHz oscillator. The first thing I did was to feel the heatsink - and again it was only slightly warm. In comparison with a (very well remembered) check of a 486DX50 heatsink, this was an utter disappointment. That check was almost a multimedia happening - it involved humorous (to the audience) visual and audio stimulation (me jumping and screaming) and it was fairly expensive - the results being the purchase of a MUCH larger replacement heatsink and a fan. I found it strange that a SMALLER heatsink would be adequate, the PC logic of doing things must be rubbing off!

Now came the moment to test the speed. This was done by using the excellent Ergon Zexcel ZX Spectrum emulator. I had timed certain things on the SGC at home, and it seemed a good idea to use them as a baseline. This is where the 'A computer can never be too fast' clause was seriously challenged - even the very complex games on the Spectrum are significantly slower than the QXL, in some cases the QXL is almost 3 times faster! I had to disable caches, and in one occasion even use SLUG 2 to get usable speed. Timing was very difficult, so I can only offer a very approximate index - between 180% and 250% of a SGC. The next test was drawing some fractals using a very old program, which has a nice feature - it stores the time it took to generate a fractal with the parameter data. Unfortunately, it turned out not to be compatible with SMSQ, although I managed to get it running (more or less), albeit without the ability to access files. I used the standard Mandelbrot set which is the default for the program. Not having any timings around, I tried it again at home, and it turns out that using a floating point algorithm (which is about 6 times slower than the integer one) is about twice as slow as the SGC using the integer algorithm. That's makes the QXL at 30MHz almost 3x faster than the SGC.

Now, for the moment you can forget about the disclaimer from above - this procedure you are wholeheartedly encouraged to perform:

Around that time (11 AM or so) my colleagues started peeking at my monitor, intrigued by the very peculiar (for them) display. It took about 10 minutes for me to get them interested and extremely distrusting to some of my claims. Then I offered to buy a pizza to anyone who finds ANY editor (even the simplest) and manages to start more copies on a 16Mb PC with Windows, than I can on a 8M QXL. If I win, I get a pizza myself. I used QD as the editor of choice (not having any others around). Since it's set up as a hotkey, a simple HOT_DO in a loop was enough - in a few minutes the QXL started 'burping' indicating there is no more memory available. QPAC2 Jobs which was opened beforehand was picked, and it presented a VERY large window containing 191 jobs. Windows 3.11 on a 16Mb PC managed 16 Notepad editors before coughing up a 'Not enough memory...'. Who says there's no such thing as a free lunch? Not surprisingly another wager didn't work, because they believed me instantly when I claimed that removing all the jobs will return all the memory, and of course it did.

QXL... at Full Throttle - (cont'd)

At this point you may consider me a low-life for doing a thing like that - sorry if anyone is offended but it really felt good - and it tasted even better.

In the course of the next few weeks I've been using the QXL heavily, first in a 5 day long test run to see if the bodged 30 MHz upgrade will make it crash, due to the slow glue chip. The QXL was made to calculate an iterative function (`x=2 : rep : x=ln(x) : x=x*((x>0)-(x<=0)) : print x : end rep`) - which looks as a random number generator (but it's not), in the background, i.e. without the PC front end running. This is one of the things I like very much about the QXL - it's ability to keep on working even if the PC front end program stops, as long as the QXL itself does not need the PC's input and output facilities. The later excludes screen output, which is very convenient. After 5 days the test was ended because there was a power brownout. I had checked the QXL only hours before that and it was doing nicely. In my experience the QXL has mostly had problems with the PC front end, and not with itself.

There is also a lot to be said about the speed of SBasic. In an almost ridiculous test, and I say this because of the gross mismatch between the test machines and the simplicity of the test, the said QXL with SBasic and a standard JM QL were programmed to execute an empty FOR loop with a floating point control variable. The QXL was about 485 times faster (yes, 485!). It's very interesting to observe SBasic at work - in a test program which involves calculating something similar to a fractal and displaying it as pixels on the screen, row by row, two loops are used - an inner loop for the pixels in a row, and an outer loop for the rows in the screen. It is easily noticeable how the second and remaining rows are drawn much faster than the first - namely, once the first row is done, SBasic has executed all the commands in the program once, and has established it's internal data structures, so the next time it goes over the same commands it's much faster - this had nothing to do with the fractal itself, as it's uniformly complex. You are probably asking yourself why I have not said that SBasic compiled the program - well, the manual clearly states it's a threaded code interpreter, so it's not a true compiler, strictly speaking - it never actually generates pure executable code. Be that as it may, it comes pretty close to a 'real' compiler!

Screen handling on the QXL is also extremely fast compared to a QL, but the nature of the QXL's screen makes it look much slower than it really is - the PC front end actually interprets the contents of the part of the memory the QXL uses as screen memory, and displays it on a VGA card. I have found the rate at which it does this perfectly acceptable - however, fast moving graphics and scrolling windows easily overtake the speed of screen refresh. In some cases this is a problem - scrolling through a SBasic program using ED is very fast even with an editing window of 800 by 600 pixels - in most cases the window contents have already scrolled a few lines before being refreshed, creating an effect almost like multiple line scrolls in Lightning (LNG_ZIP 4 would be a good approximation). In some cases the whole window is scrolled 'instantly' - this occurs when doing DIR, or EXTRAS for instance. However, it's no real problem, and you get used to it really quickly.

There are other things about the QXL display which are intriguing - in one of the PE manuals, Tony Tebby himself laments on hardware which would be able to display both MODE 4 and MODE 8 windows, at the same time - well, the QXL is that hardware. The software needed for such a feat is of course an altogether different matter, but it does provide food for thought! Another thing which is far simpler to do, and which I would like to have, is the ability to program the VGA palette (maybe make it CONFIGurable in SMSQ) so that the eight colours of the QXL can be programmed from a larger set, to the user's preference. While at it, it could be nice to use the flash bit which is anyway not supported on the QXL to generate 16 colours in mode 8 instead. This all needs only a small amount of programming.

File access on the QXL is a completely different matter regarding speed. It's well known that reading and writing floppy discs is not very fast, but that is not always so - for instance, copying a collection of files from RAM to floppy is actually faster than doing it one by one. Having two CPUs to do IO could probably help a lot as SMSQ for the QXL progresses into newer versions - we already have the promise of background access to the floppy, in form of a new driver. I can only say I can hardly wait.

A thing I don't like about QXL floppies is the treatment of the PC file and extension separator, which is the full stop character. I think this should be treated in the same way as an underscore, or some other trick should be used, so it becomes a simple matter to replace the dot by an underscore, by WREN or similar. Also, you cannot simply do a WDEL .txt (you can with _txt), and other things along these lines. The same is true on other SMSQ(/E) versions.

QXL... at Full Throttle - (cont'd)

Also, there seems to be a bug which makes the system think that a PC floppy disc that has been changed is still in the drive. It will continue returning the same directory even if the disc is changed, until you pull it out and try to access the now empty drive. The system will recognise there is no disc, so when you put another disc (or the same one, for that matter) into the drive, it will be forced to re-read the directory, and not use a copy of it already in memory. A good way to demonstrate this is to pop out into DOS by pressing CTRL SCROLL LOCK, adding a file to the disc, and returning into SMSQ again. If you want the new file to be recognised by SMSQ, you will have to pull out the disc, attempt any operation with it (unsuccessful, because there is no disc), and put it back again. I hadn't tried what would happen if I save something onto a disc which is incorrectly recognised, for obvious reasons. Interestingly enough, the same is reported by a friend of mine who uses SMSQ/E on a SGC. The SMSQ/E version is 2.50, as far as I know a few versions behind the current, so this might have been corrected already. Luckily, if you know the problem is there, it's very easy to deal with.

Access to the hard disc is something different again. While being sufficiently fast, even with the crazy controller I have in the PC it's still by an order of magnitude slower than QUBIDE with a fast drive, maybe even slower. However, I'd go along with that if only I could have more than one QDOS drive without the need to have more than one PC drive, or - even better - direct access to the PC's hard disc. This might be wishful thinking, but as they say, if you don't ask...

I hadn't managed to test the serial ports yet - the mouse I use is a bus mouse so it doesn't use a serial port (if you don't know what the 'bus' in 'bus mouse' means, you aren't missing anything). One thing which I do have connected to a serial port is a modem. Unfortunately, this is an internal modem, and it stands in place of serial port 3 on the PC. Now, why in Heaven's name would the QXL, which at least tests the third port (if you try running SMSQ from Windows, with a communication program running which uses the modem, Windows will complain about a device conflict), not implement a ser3 for it? Could we have ser3 and 4? Please? The parallel port works very nice, especially as there is a laser printer connected to it. Unfortunately, only one is recognised, similar to the restrictions for the serial ports. How about a par2?

OK, before you continue, please remember the disclaimer from before, because things are about to get experimental again...

After several weeks, I'm back to hardware problems - the postman delivered the new, faster glue chip, and a higher frequency oscillator, for 80 MHz.

Initially, pushing the QXL to higher frequencies seemed quite simple - the fast 40 MHz CPU was already installed, now all that was needed was to pop out the old slower glue chip, put in the new, and change the clock oscillator for the faster one. After all that was done, and the QXL once again put into the PC, typing the by now well known 'smsq' command promptly produced an error: 'QXL at address 2B0 is not responding'.

After a few tries, it was obvious that the time has come to boldly go where no one has gone before, and attempt to modify the QXL. As always, the first thing to be considered was noise and associated problems. To run a 68040 at a given frequency, you need an oscillator for twice that frequency, as already stated. The 80 MHz oscillator was intended to run the QXL at the full CPU speed of 40 MHz. At 80 MHz, digital electronics is already VERY serious business - after all, only 10% more and you are in the domain of FM radio!

Anyway, after adding about 15 or so surface mount decoupling capacitors across power and ground, and a few terminating resistors onto strategic places on the QXL board, the error message disappeared, and the QXL started responding - unfortunately, with a blank screen. What was worse, no amount of simple signal integrity measures would change that. Clearly it was time to call Miracle again and respectfully ask for advice.

Once again, Stuart Honeyball of Miracle proved extremely helpful, and armed with some new knowledge about the internal workings of the QXL, a 68040 databook, and an oscilloscope, I again switched on my soldering iron, in another attempt to make the QXL be a Turbo GTI QXL. Unfortunately, this was not to be - because of a lack of instrumentation capable of observing the clock signals with the accuracy needed, I had to switch to the fallback plan. If the QXL worked at 30 MHz and ALMOST worked at 40 MHz, why not use something between

QXL... at Full Throttle - (cont'd)

those two, like 35 MHz? About 20 minutes later, a 70 MHz oscillator, originally with totally incompatible output levels (because it was intended for something completely different) got modified using a few electronic trinkets. and - Voila! The QXL is now happily working at 35 MHz! This is probably how it will stay for a while - until I make a variable clock oscillator, simply to see if it will go faster. If it does, there will surely be a follow-up article, so watch this space! As an indicator of the speed, the following program takes 31 seconds to complete on a 35 MHz QXL:

```
10 x=2
20 t=date
30 for f%=0 to 9999
40 for g%=0 to 19
50 x=((x>=0)-(x<0))*x
60 x=ln(x)
70 end for g%
80 end for f%
90 print date-t
```

To wrap this up, all that remains is to ask (and attempt to answer) the obvious question:

Why insist on pushing the QXL to 40 MHz to deliver only 12.5% more speed than it already does on 35 MHz? Perhaps you think it doesn't pay off - especially since at 35 MHz it's already 75% faster than the standard. You may be right. But, since I'm not going to get away by answering the 'Why?' question by 'Because it's there', I will try to give other reasons.

One reason why I would like to push it as far as it will go (which is 40 MHz, without overclocking the CPU) is that I think it's possible, without any adverse consequences. At 35 MHz, both the CPU and the glue chip stay only warm, admittedly with the use of heatsinks, and in the case of the glue it's a really tiny heatsink. The RAM is completely cold, and in fact the thing that heats up the most is the clock oscillator! Another indicator is that the glue heats up practically the same at 20 MHz or at 35 MHz.

Another reason is that at this point it's cheap (and I'm convinced it won't suddenly become expensive - you know what I mean!). In effect, neither of the techniques used could be considered exotic, or designed to cross reasonable limits. Now, using Peltier semiconductor heat pumps to operate the CPU and glue around 0 degrees Celsius (because most chips work faster at lower temperatures), that's what I'd call exotic - an yet something like that has been done in the past by one of the major PC suppliers to push a 33 MHz 486 to 50 MHz! Incidentally, using that kind of cooling device has all it's own problems, one of them being that the moisture out of the air tends to condense on the chip, and form layers of ice, so you have to take precautions. Before you ask, the reason why I won't use exotic methods is that you have to have something to do in the future...

The third and final reason is, I believe, called progress. If you don't think it's necessary, why don't you simply do SLUG 10 and see how long you can stand it...

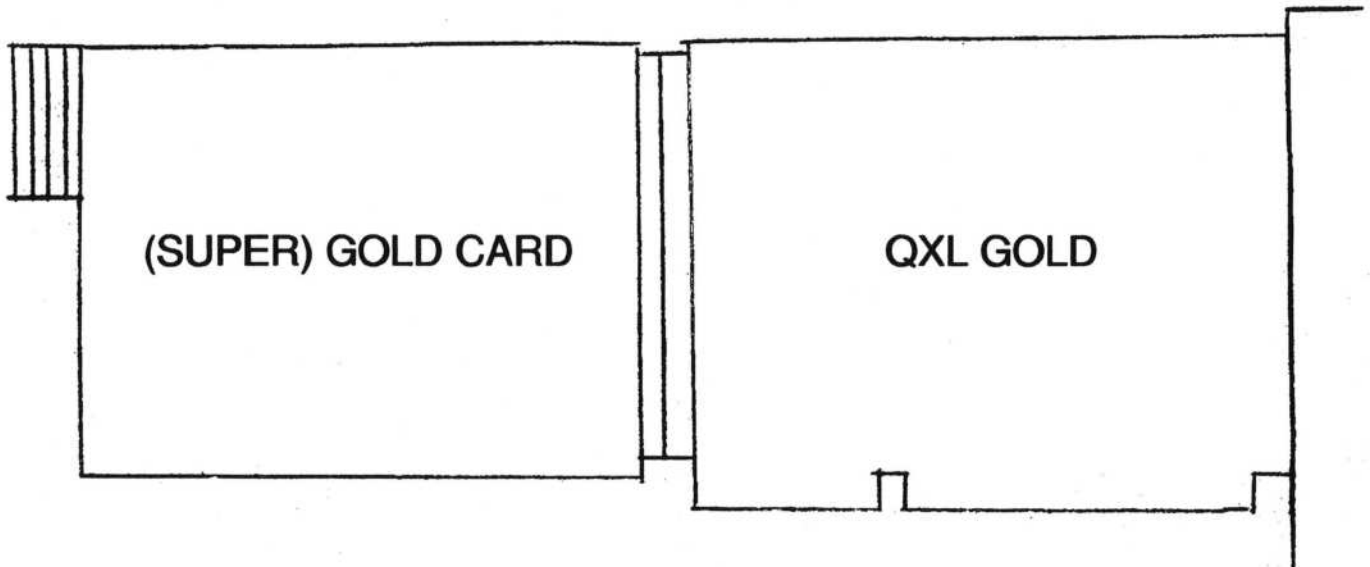
IQLR

In our last issue we asked you if IQLR should switch to A5 format rather than its current size. We received more responses via mail - telephone - bulletin boards than we have ever had. The result is 94.8% of over 400 responses said you wanted IQLR to remain the same easy to read size. You have spoken. We will remain as we are but, it is necessary to raise our subscription rates effective with our next issue (please note the changes on page 2 of this issue). The new rates reflect the now 85% increase in paper and increase in postage cost.

(We will honor any renewals sent to our North American office at the old rates until 31 December 1995. This DOES NOT include credit cards. Payment should be made by Cheque, Postal Money Order, Euro Cheque either in US\$ drawn on a US bank or £ drawn on a UK bank.)

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The low cost is achieved by making use of the processor and memory of the (SUPER) GOLD CARD so the speed will depend on the type of GOLD CARD it is used with.

It is anticipated that delivery will commence towards the end of November 1995. Orders are being accepted now. Credit cards will not be charged and cheques will not be banked until the item is ready for despatch.

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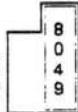


Some time ago, we were asked to look into the matter. As a result, we have produced a simple, small, yet comprehensive low cost keyboard interface for the purpose of attaching readily available AT 101/102 style keyboards to the QL.

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- Low Cost - only £32.50
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Some keys are additionally translated

AT Keyboard	Translates to QL
F5-F10	Shift F1-F5
Prt Scr/ SYSREQ	Ctrl+C
Pause / Break	Ctrl+Space
*Scroll Lock	Ctrl+F5
Page Up	Shift+Up
Page Down	Shift+Down
Home	Alt+Left
End	Alt+Right
Delete	Ctrl+Right
Backspace	Ctrl+Left
**F11	Toggles Insert mode
**Insert	Alt+Enter or Shift+F4
F12	Keypress record/replay facility
Key above TAB	£ or Shift = ~

* Scroll Lock works slightly differently from Ctrl+F5 in that it additionally locks the keyboard until Scroll Lock is pressed a second time. The Scroll lock LED indicates the current setting.

** The Insert key either returns Alt+Enter or Shift+F4 (TKII's and Quill's insert/overwrite option key). The option can be toggled with F11.

Pressing the key '5' upon the numeric keypad with numlock off will return keyboard default setting codes.

F12 enables a sequence of up to 24 keypresses to be recorded and replayed as required from interface memory.

Fitting

Very simple!! Remove QL cover, remove 8049, insert interface, insert 8049, tape membrane leads out of way and refit cover! The interface comes complete with a 5 pin DIN in line socket for quick connection to keyboards

Note

This product is suitable for connection to modern Brand Name AT 101/102 keyboards. Compatibility with other, older or multi-system keyboards is uncertain.

For the price of two keyboard membranes, an interface that will last a lifetime

Interface Price: £32.50
Post UK £1.50
Elsewhere £2.00

Interface + keyboard:

Soft Touch £50.50
Tactile key £56.50
Post UK £4.00
Elsewhere £5.00

For orders or further product information contact:

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WS4 2AX
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Tel/Fax ++44 (0)1922 33580
Email 100736@compuserve.com
Send fax in auto-send mode

Do not send credit card details via Email
Remember to include postage for all orders

Visa
Access
Mastercard
Eurocard

Important notice

Di-Ren will be closed between 14th and 28th November 1995